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STEEL

The Magazine of Metalworking and Metalproducing

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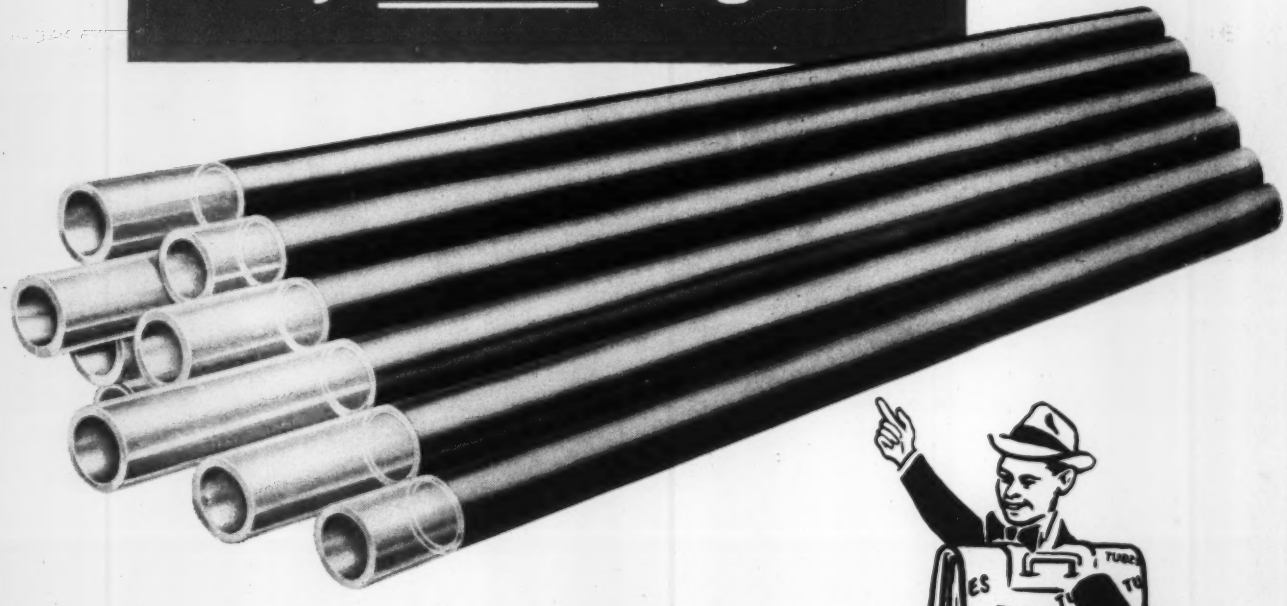

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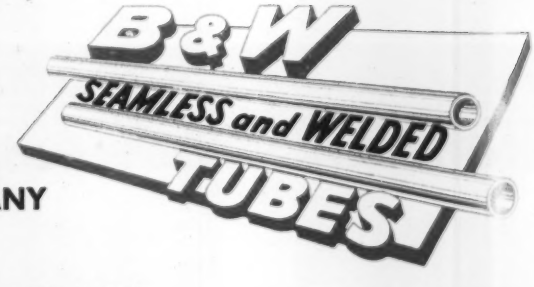

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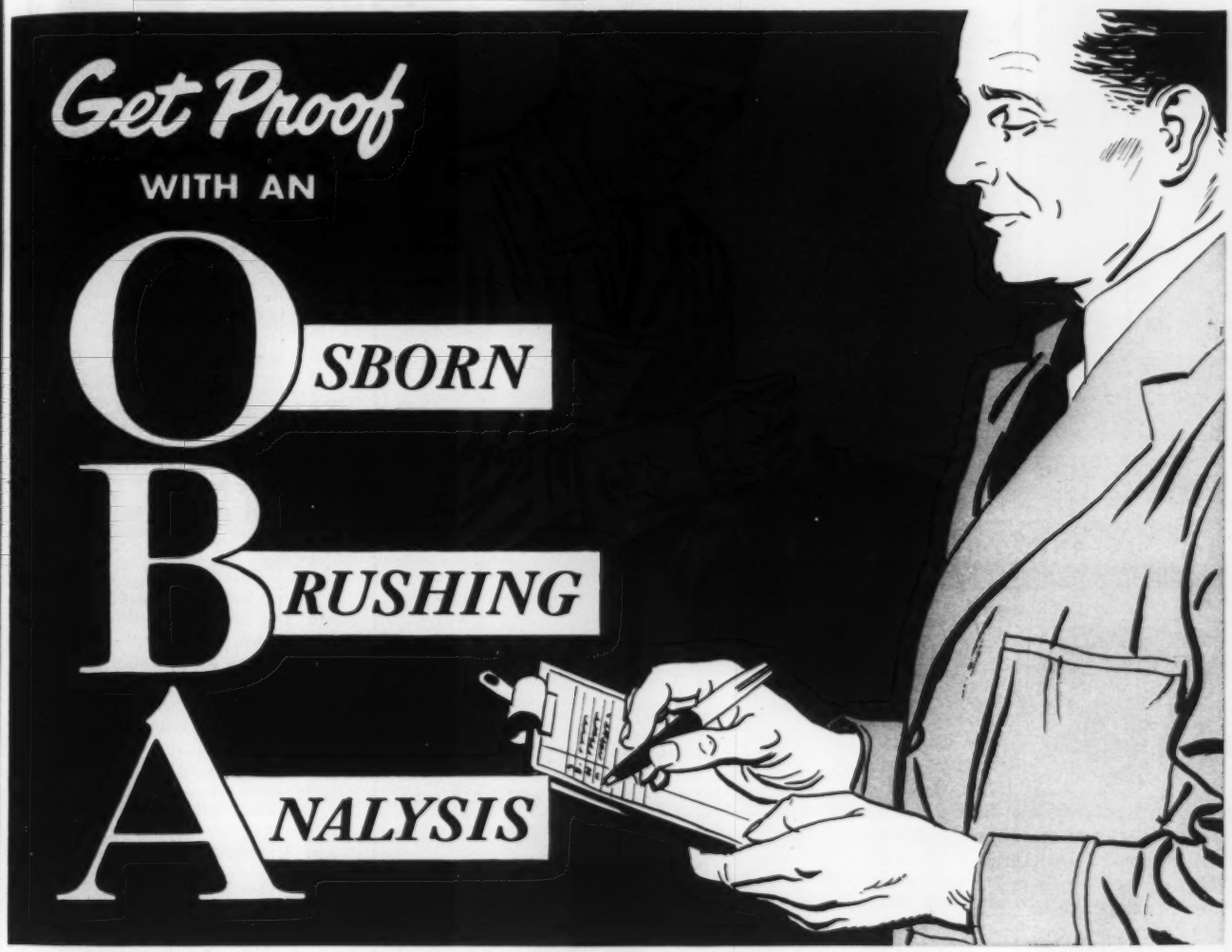

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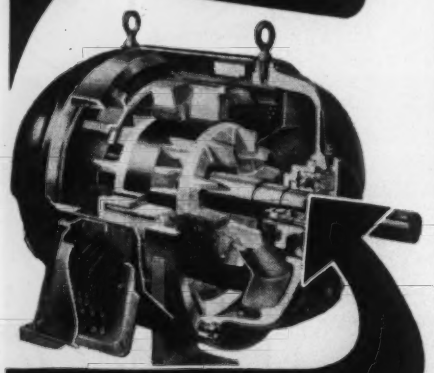

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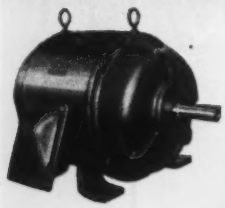

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Behind the Scenes...

Depreciation Day

Today is D day. Associate Editor John Morgan's summary of what's wrong with the government's tax depreciation policy starts on page 53.

Here is no superficial study of a problem everyone knows exists. It's an analysis that digs into fundamentals—sums up the reasons for federal policies, shows the little understood effects of the tax policies and presents the considered judgment of experts in the field on what can be done for legislative reform. The article will help industry chart its course to get an improved depreciation program.

The article is illustrated by Pat Dwyer Jr.

He Likes Us

We have received a delightful letter from Mr. Enrique Lobl of Horacio Torrendell, Uruguay. He writes: "I feel that 'Behind the Scenes' is wonderful, and I am often laughing a lot at what Shrdlu says."

Yes, Geraldine, we hear you. He likes the rest of the magazine, too.

No More Golf?

STEEL's new managing editor, Walt Campbell, is wondering if the pressure of his added duties will let him keep up his golf handicap of four. A thing of the past, also, may be his holes in one. He shot one last year and got a case of Wheaties.

At last report, his seven-year-old son, Greg, rebelled at eating the stuff when the case was only half finished. Some say that Scotsman Walt is storing the remainder until his year-old daughter, Pat, is old enough to eat it.

"I deny that," said Walt when we went up to interview him on the general situation. We found him just about to tackle a stack of mail three feet high on his desk.

"Congratulations, Walt.

"Thanks. Excuse me, will you?" The phone was ringing.

A complex conversation followed about freight rates on steel from Baltimore to New England. After that was over, we had just started talking about golf when Associate Editor Vance Bell came in to discuss a project he's on.

"Keep mum on this for a while, Shrdlu," Walt told us. "We're not ready to break it yet."

Another telephone came, from Ed Kreutzberg, Washington editor.

"Say, Ed." Walt propped his feet on a pulled-out drawer of his desk. "What about a round-up yarn . . ."

As this conversation showed signs of running on, we signed to Walt that we would see him later. That afternoon we called him up on the office phone and got all the information we needed.

Woody Woodpecker

Rap . . . rap . . . rap . . . tap . . . rap . . . rap . . . rap . . . tap.

That sound was like no typewriter clicking we ever heard. At first we thought someone was bonging on the radiators. We investigated in our best editorial manner. Nothing on our floor. Upstairs directly above our cubby hole we found the answer. Assembled in the STEEL library was half the editorial staff, watching a red woodpecker outside furiously attacking the wood window frame in our downtown office building.

The bird flew away toward the New York Central Railroad building just as we elbowed our way through the crowd to get a better look. The woodpecker had dug a hole a quarter of an inch deep and as big around as a quarter.

Puzzle Corner

In the problem of Apr. 24 about ages of members of the Jones family, Jenny was 1 then and 9 now, Jimmy 4 and 12, Mrs. Jones 28 and 36, Mr. Jones 32 and 40. Among those submitting correct answers are S. A. Fronek of Crucible Steel Co. of America, E. L. Sweet of Standard Gage Co. Inc., O. A. Davis of Davis Engineering Co., R. B. Bagby & Co. and Ralph Pappenheimer of Specialty Device Co.

Jimmy is involved in another situation. He and two friends, Charley and Bill, made $98 among them last summer. Charley made $11 more than Jimmy. Billy made $28 less than Jimmy and Charley combined. How much did each make?

Shrdlu

(Editorial Index—page 45)

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STEEL

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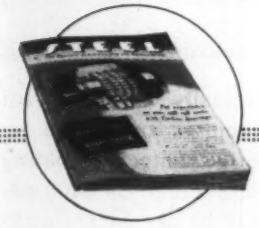

May 8, 1950

Showdown in November

Results of last Tuesday's primaries in Florida and Ohio afford a basis for speculation on two important points. One is the extent to which the American people approve President Truman's "fair deal" policies. The other is the true effectiveness of the labor unions' loudly heralded campaign to defeat any candidate for Congress who opposes the unions' drive for more power.

In Florida, 36-year-old Representative George A. Smathers, running for nomination as United States senator, received 382,167 votes against 318,860 for the incumbent Senator Claude Pepper. Candidate Smathers campaigned on a record of having supported the Taft-Hartley law and opposed F.E.P.C. and some Truman policies including the Brannan farm plan and the public health subsidy. Senator Pepper ran on a record of complete approval of "new deal" and "fair deal" policies. The unions' political-action organizations were reputed to have gone "all out" in money and effort to elect Pepper and defeat Smathers. The latter's margin of 63,307 votes would seem to indicate that citizens of Florida do not wish to give a new mandate for the "fair deal" nor are they impressed with the arguments put forth by union political actionists.

In the Ohio primaries, Senator Robert A. Taft, running unopposed for re-nomination, received 475,049 votes. Seven Democrats seeking to be nominated as his opponent received a total of 407,953 votes. The successful aspirant, Joseph T. Ferguson, received 157,314 votes. It is significant that Ferguson was not the hand-picked candidate of the union political-action organizations. The unions had failed to agree on a candidate of their own choice.

However, the stage now is set for a brisk contest between Taft and Ferguson in November. President Truman's administration and many union chieftains have promised to concentrate nation-wide support in money, time and effort to elect Ferguson and defeat Taft.

It remains to be seen whether the administration-union coalition can do any better in Ohio in November than it did in Florida in May. The situation easily could develop into a crucial showdown as to whether the people want to call a halt to the Truman-union type of administration. It presents a real challenge to all who oppose the Truman-union drift toward socialism.

* * *

BULLETIN F IS ARCHAIC: Practically every manufacturer realizes that the current attitude of the Bureau of Internal Revenue toward depreciation charges for plant and equipment is woefully unrealistic under conditions existing today. In spite of constant pressure on the part of numerous trade associations, little if any progress is being made in correcting the situation. Sensing this fact, this publication has decided to present all angles of the depreciation problem to readers in the hope that enough pressure will be exerted in influential quarters to induce remedial legislation.

In launching this campaign for more realism in depreciation charges, STEEL presents in this issue a four-page article by Associate Editor John S. Morgan which summarizes the problem in clear-cut terms. Subsequent articles will go into details as to specific aspects of the general problem.

Indicative of the importance of depreciation charges is the fact that competent experts esti-

(OVER)

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mate that unrealistic depreciation figures are causing American industry to overstate its income by $4.4 billion annually. This results in an overpayment by industry of about $1.7 a year in income tax. In the metalworking industries alone, overpayment of income taxes is estimated at $645 million annually. We are writing off plant and equipment at a snail's pace in a greyhound age.

Fortunately reform in depreciation practice would not deprive the government of revenue. On the contrary, in the long run, realistic write-offs would stimulate modernization and expansion of plant and equipment, thus increasing production and taxable profits. —p. 53

* * *

BUYING FOR MILITARY: Government purchases for the Army, Navy, Marine Corps and Air Force currently are providing a substantial volume of work for the metalworking industries. The retooled Detroit Arsenal is assembling 45-ton M-46 General Patton tanks at a rate of four a day, reconditioning 25-ton medium tanks at a rate of two a day and conducting extensive experimental work in the development of prime movers and newer and more powerful mobile weapons and equipment for all four branches of the military establishment. A group of 50 buyers is kept busy placing orders for the materials, parts and equipment required for these activities.

Meanwhile more orders for the military are virtually assured. The military appropriations bill now being studied by a House committee proposes purchase of about 27,000 passenger cars and trucks for the armed services at a cost exceeding $92 million. —pp. 60, 68

* * *

PROTECT THE SURFACE: Many types of household equipment now being manufactured in large quantity by metalworking companies have bright surfaces which must be protected from scratches and other blemishes during manufacture and assembly. It is disconcerting to perform a lot of work on a unit and then have it go for naught because an important surface has been marred. In the case of a Wisconsin manufacturer, a loss of $60 was incurred every time a stainless steel top of one of its commercial refrigerator cabinets was scratched.

In seeking methods to solve this problem, the company tried applying a strippable plastic coating to the stainless steel sheets. The plastic compound, applied with a spray gun, protects the sheets throughout 10 different fabricating operations and is removed easily with a solvent just before the finished cabinets are crated for shipment. Use of the effective protective coating has saved the company an average of $100 per day and has boosted output 14 per cent.—p. 82

* * *

BIG SHOW WAS A FLOP: A few weeks ago it was broadly hinted in Washington that the then approaching hearings on the economic power of big companies in the steel industry to be conducted by the House Judiciary (Celler) committee would provide exciting fireworks. Persons in the know were saying that chairman Emanuel Celler and his staff assistants were primed to shoot the works against corporate bigness.

The hearings failed to live up to their advanced billing. Celler's associates on the committee wouldn't back him up on some of his extreme views. Steel company executives made a good case for bigness in the steel industry. Charges which Representative Celler hoped would prove sensational turned out to be duds.

When the ordeal was over, principals on both sides exchanged compliments. Does this mean that antibusiness members of Congress are abandoning their persecution of industrial giants? Or does it mean that they are gracefully backing out of an awkward situation and biding their time for a renewed attack? —p. 57

* * *

IDEAS FOR FOUNDRYMEN: This week, from May 8 to 12, the 54th annual Foundry Congress and Show of the American Foundrymen's Society will be held in Cleveland. The five-day program includes technical sessions at which 85 papers will be presented, the exposition at which 250 companies will display their products, practical shop courses and visits to 14 of Cleveland's 106 foundries.

There are indications that in point of new ideas obtainable either from the demonstrations of machines, equipment and supplies at the show or from discussions of modern foundry practice in the technical sessions the 1950 foundry classic may excell its predecessors. It is reported that a number of significant new developments will be displayed for the first time at the Cleveland show. Competition encountered in the marketing of castings makes any improvement in equipment or method doubly welcome. —p. 58

E. L. Shaner

EDITOR-IN-CHIEF

News Summary

WEAR AND TEAR—Federal tax policies on depreciation are eroding industry's capital investment, a special study by STEEL shows (pp. 53-56). The Bureau of Internal Revenue's Bulletin F gives the estimated length of life for plants and equipment that you must follow in figuring taxes if you haven't the proof that you have charted a different course in the past. Bulletin F sets the average length of life at 20.74 years, far too long for today's conditions of changing price levels, economic expansion and new mechanical discoveries. Industry has two related problems: To establish a forward-looking re-equipment program within its own plant and to convince government that a more realistic tax philosophy on depreciation is essential if it is to finance and administer such a program.

BETTER THAN EVER—Now that the Chrysler strike has been settled, the business outlook is better than ever (pp. 70-73). Some companies are dusting off pigeon-holed expansion plans. New orders reported by manufacturing companies in March hit a postwar high of $20.6 billion. High operations through the third quarter are forecast by U. S. Steel Corp. and Bethlehem Steel Corp. Even without Chrysler the passenger car assembly total for the year as of the end of last week neared 2 million.

AUTO DELUGE—With Chrysler moving back into full production, look for some sensational auto industry assembly figures soon (p. 58). The company plans to turn out 42,000 cars and trucks a week. Chrysler suppliers were hit, but not severely, by the shutdown because many could sell their volume to other automakers and because Chrysler has been jamming the warehouses with a float of steel and parts.

THE FIREWORKS FIZZLE—The steel industry's good public relations helped calm the tempest that threatened to arise at the Celler subcommittee hearings on economic power in the steel industry (p. 57). Detailed and well presented testimony by many steel company executives is one of the reasons why Chairman Celler must temper his recommendations to get a majority of his committee to support them. At the start of the hearings, he said he would seek broader power for the government to break up big companies.

COMING UP—The writing on the international walls indicates that military business is going to become an increasingly important factor in metalworking activity (p. 60). At least $500 million more will be voted by Congress for defense in the next fiscal year. It will bring defense expenses to over $14 billion.

STEEL CARTELS—The Economic Commission for Europe, a group seeking to co-ordinate Europe's recovery, says European steel cartels are inevitable unless governments join to stop them with an international agreement to regulate overproduction, the major factor spurring the growth of trusts (p. 65). French, Belgian and Luxemburgian producers who have an agreement on the Swiss market are getting the equivalent of $70.13 per metric ton for merchant bars, $70.13—$72.46 for joists, $72.23 for hot-rolled hoops, $72.23 for hot-rolled wire, $78.29 for 4.76 mm plates and $108.11 for 1 mm sheets. Those prices don't include duty charges and are delivered quotations at Basel, Switzerland.

HERE AND THERE IN INDUSTRY—President Truman's Reorganization Plan No. 5 and problems still to be solved regarding private rights to government-contract patents has the whole patent situation up in the air (p. 63) . . . The Labrador-Quebec ore discoveries may aid approval of the St. Lawrence seaway project now being considered by the House (p. 57) . . . Crane Co. is entering the domestic warm air heating field with a new furnace (p. 58) . . . Whiting Corp. has sold its Freezer Division to Baltimore Porcelain Steel Corp. (p. 64) . . . Bethlehem's first cargo of iron ore from its Venezuelan mines will arrive in the third quarter; Bethlehem counts on getting 3 million tons annually from these mines . . . Allegheny Ludlum Steel Corp. will spend $23.6 million over the next three years for a new laboratory, a new hot strip mill and additional cold-rolling facilities at Brackenridge and West Leechburg, Pa.

Production-Engineering News—p. 81 *Market Summary*—p. 119

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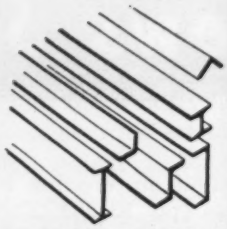
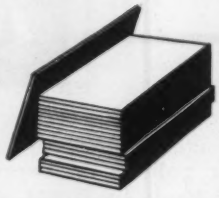
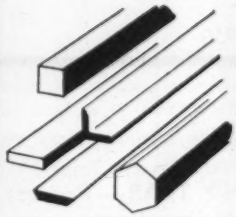
HOT AND COLD ROLLED SHEETS AND STRIP



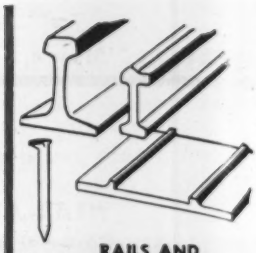
STRUCTURAL SHAPES



CARBON STEEL PLATES

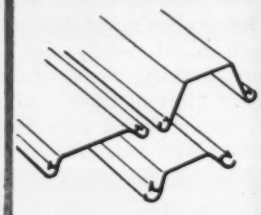


CARBON STEEL BARS

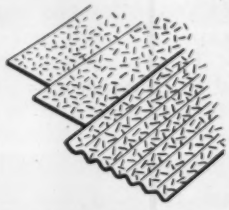


RAILS AND TRACK ACCESSORIES

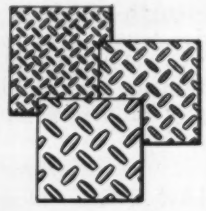
HI-BOND* REINFORCING BARS



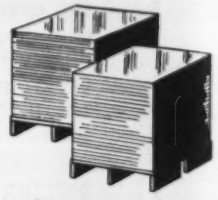
SHEET PILING



GALVANIZED SHEET PRODUCTS



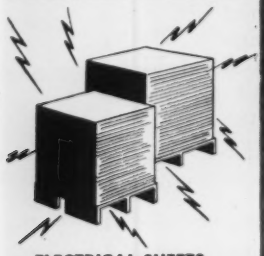
4-WAY* SAFETY PLATE



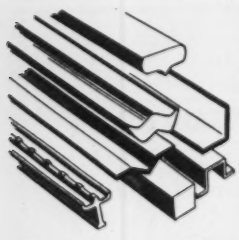
TIN MILL PRODUCTS

ENAMELING IRON AND TI-NAMEL* SHEETS

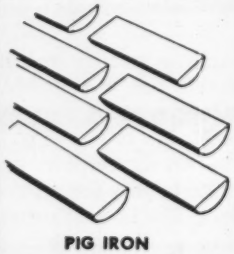
you can rely on **INLAND** for the **RIGHT STEEL**



ELECTRICAL SHEETS

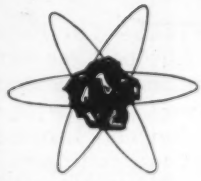


RAIL STEEL PRODUCTS

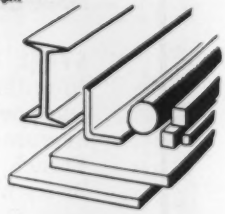


PIG IRON

LIMESTONE



COKE BY-PRODUCTS



HI-STEEL* PRODUCTS

the men and mills of INLAND STEEL COMPANY are geared to serve the industrial heartland

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STEEL
A PENTON PUBLICATION

YOU and other metalworking executives are paying nearly $645 million a year too much in corporate income taxes because federal laws and the Bureau of Internal Revenue force you to write off your plant and equipment at a snail's pace in a greyhound age.

YOU are overstating your gross corporate income to the tune of $1.7 billion annually—because of the government's depreciation requirements. That means not only the income tax overpayment, but overlarge dividend disbursements and diluted equity in your plant.

YOU and executives of all industries are paying nearly $1.7 billion a year too much in income taxes because you must overstate your income by $4.4 billion annually.

YOU are losing incalculable millions a year because it's often too expensive to fight Bureau of Internal Revenue rulings in court.

IF YOU don't want to see American industry strait-jacketed by depreciation restrictions, push for legislative reform and clean up your own backyard.

NEEDED:

Depreciation Reform

The government is reluctant to modernize its obsolete writeoff regulations, and it's high time for change

By JOHN S. MORGAN
Associate Editor

BACK in 1934 Bruce Lawson, president of an Ohio metalworking plant, sat biting his fingernails one gloomy morning. He was waiting for the mail, a phone call—anything in the shape of an order to help keep his plant running.

But there were no phone calls, and his mail consisted of nothing but bills and a pamphlet from the Treasury Department labeled Bulletin F. He scarcely looked at any of it.

Today the Lawson plant has tripled in size and is operating at 100 per cent of capacity, but Mr. Lawson is still worried. One problem stems from the seemingly innocuous Bulletin F issued 16 years ago.

That bulletin lists the estimated length of life for a vast array of equipment, outmoded estimates that much of industry must now follow in figuring depreciation for federal tax purposes. That bulletin has made possible the Treasury's gradual about-face over the past 16 years on tax depreciation policy. That bulletin is one important cause of a cancer-like malady eating away the physical assets of Lawson's and your company.

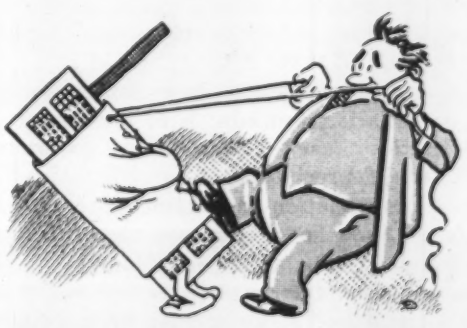
Since 1934 the government has evolved a rigid depreciation policy that has brought many problems. The most serious is failure to take adequate account of postwar inflation. National City Bank of New York estimates that 1948 depreciation of all nonfinancial companies fell $4.4 billion short of recovering the current dollar cost of making good their annual wear, wastage and obsolescence in plant and equipment, the bulk of which was bought at prewar prices. Government tax depreciation provisions forced these companies to overstate their profits in 1948 by $4.4 billion. At the 38 per cent federal income tax rate, industry in 1948 paid $1672 million too much to the government. Overpayments were probably nearly as much in 1949.

The metalworking industry alone under-depreciated to the tune of $1.7 billion in 1948—and paid $645 million too much in income taxes. Since the end of 1945, all industry has overstated its profits because of inadequate depreciation allowances by at least $16 billion. That means a tax overpayment of $6 billion.

That also means "the road to capital erosion," says Enders M. Voorhees, chairman of the finance committee of U. S. Steel Corp.

"A concealed dissipation of capital is occurring in most businesses today," says H. T. McAnly, partner in the accounting firm of Ernst & Ernst.

"The charge for wear and exhaustion [that the



Depreciation restrictions strait-jacket industry

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government permits] cannot provide sufficient cash to pay for replacements at the inflated prices now prevalent," charges W. P. Witherow, president of Blaw-Knox Co.

How It All Happened

In 1934 the federal government needed more income but hesitated to raise taxes in the depression. Surveys by Treasury's Bureau of Internal Revenue and others revealed that industry was using its physical assets far longer than it claimed in its tax returns. The revenue people worked up a schedule of useful lives for a list of physical assets—Bulletin F. Besides issuing Bulletin F, BIR began enforcing a little-used statute provision that the burden of proof is on the taxpayer in his claims for depreciation. The bulletin was changed a little in 1942. That 1942 edition, modified by occasional changes in the past eight years, has become the depreciation bible for industry. It sets up the average useful life for physical assets at 20.74 years.

Prophet of the depreciation gospel

From 1934 on BIR required industry to follow Bulletin F schedules unless it can prove that historically it has followed a different schedule. BIR originally thought most of industry would have the factual data to prove its schedules. That has not happened. The result: Bulletin F is the near-universal gospel. Its prophet is the Bureau of Internal Revenue. When it was suggested to a bureau official that it start an evolutionary process in depreciation policies to something like the status of 1934, the man gasped: "My God, fellow! Undo the work of 16 years?"

What have been the effects on industry of that work of 16 years? If the U. S. economy today were paying the same prices for its plant and equipment as it did in 1939, if it were expanding now at only the moderate rate of 1939, if more efficient equipment were coming on the market today at only the moderate pace of 1939, industry would still be throttled by the government's depreciation policy. Besides the inflation problem, here are six other major difficulties caused by the federal government attitude toward depreciation:

1. New depreciation requirements first enforced by BIR in 1934 have increased the bureau's work enormously—to say nothing of industry's. Because of this and other factors, BIR is five years or more behind in audits of many companies' records.

2. BIR depreciation philosophy perpetuates an erroneous re-equipment policy by industry of the 1920s and 1930s that was probably wrong then and certainly doesn't meet today's conditions. Because industry kept its equipment in use an average of 20 years in that period doesn't mean that industry should have used its equipment that long then. Bulletin F of 1942 still stands, yet look at the technological advance in the past eight years.

3. Bulletin F forces an amortization pattern on industry that is psychologically unsound. Lawson, and you too, tend to keep a machine the 20 years allowed by F, just to get your full depreciation out of it.

4. BIR policies say that Lawson must depreciate on a straight-line basis—that is, the same depreciation must be charged off when the machine is one year old as when it is 19 years old. This is despite the widely recognized fact that machines depreciate more in their early years than later. Other accounting methods are permitted that partly remedy this fault—but they're allowed only to a limited extent.

5. BIR permits only limited relief in relaxed depreciation provisions for extraordinary obsolescence—that is, technological change that obsoletes equipment before it is physically worn out. Among Lawson's products are parts for automotive transmissions. The trend toward automatic units is obsoleting some of the equipment he uses to make conventional transmission components. He sees the way the wind is blowing and knows he'll have to replace some nine-year-old equipment in the next 12 months. He's been to Washington twice to get a new depreciation schedule approved. The law provides for this sort of situation, but in five months of effort Lawson got nowhere.

My God, fellow! Undo the work of 16 years?

6. Government policies and legislation have you in the hole on depreciation when your company has a loss year. Depreciation can be charged against profits, not losses. The Congressional action permitting a two-year carry-forward or carry-back of losses helps somewhat. But this is a cumbersome device and gives no recourse if the company has losses or only very low profit for three years running.

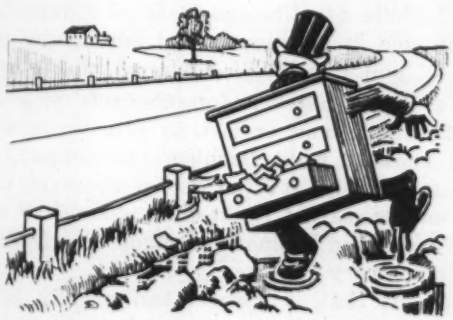
The Shape of Reform

What can be done? The Bureau of Internal Revenue won't change its ways, so Congress will have to force it to change. Sen. Joseph C. O'Mahoney's Joint Committee on the Economic Report admits something must be done about federal depreciation

policies. But no proposals are made. Secretary of the Treasury John Snyder reportedly has requested Democratic leaders to hold up on this reform because of the budget deficit—even though a reduction in income tax rates can mean an increase in federal tax take. When corporate income tax levies were reduced in 1919, 1923-24 and 1926, U. S. Treasury receipts rose.

Not all depreciation authorities are in agreement on what should be done. But Machinery & Allied Products Institute; National Machine Tool Builders Association; Dean L. Weichman, a Cleveland tax attorney; Eugene L. Grant and Paul T. Norton in their book, *Depreciation;* Lewis H. Kimmel in his book, *Depreciation Policy and Post-War Expansion;* and Ernst & Ernst—all agree that Congress must do something toward reform, if not in this session, then in the next. These specialists also agree that of all the problems created by federal depreciation policies, three stand out: Inadequate account is taken of inflation; BIR policies force industry to use antiquated equipment; BIR is as much as five years behind in its tax audits.

Three general remedies are possible for the inflation problem: 1. Appreciate prewar equipment to comparable postwar values. 2. Depreciate on the basis of replacement cost rather than upon the purchase cost basis. 3. Set up a special, tax-free depreciation reserve—in addition to the now-allowed depreciation —for prewar equipment; the additional depreciation would be taken on the difference in purchase cost and replacement cost.



Internal Revenue Bureau prefers the rough road

The third possibility is the most practical solution. Administrative difficulties would make the first two nearly impossible to carry out. Many depreciation authorities think Congress should allow suitable deduction in addition to that for depreciation. The credit to the reserve allowable as a deduction might be restricted to one half the regular depreciation allowance on assets acquired before the war. Such allowances might be authorized for a period of three to five years. Tax free credits to replacement reserves would be an allowable deduction provided the taxpayer replaces such equipment within ten years from the time the deduction was taken in the return.

But the whole price-level problem must be solved. The depreciation reserve idea serves for just one general price move—prewar to postwar.

Some depreciation specialists suggest a solution that applies not only to this but to the other two major difficulties. In the long-run it won't cost the government a dime in lost revenues.

They think Congress should let industry depreciate either on the estimated length of life for the machine or on the estimated production in the machine. Industry should be permitted to assign any number of years or any amount of production it wants to.

"We can't do that," a bureau official told Lawson. "The administrative job of ferreting out unreasonable depreciation schedules would be mountainous."

Congress won't touch depreciation this session

"Why bother to prove or disprove depreciation schedules at all?" Lawson almost pounded on the table. "What difference does it make to you whether I depreciate a machine $100 a year for 20 years and get my tax credits on that or depreciate my machine at $200 a year for ten years, get my tax credits on that and then don't depreciate it at all for the next ten years? I'm protected against price changes by the quick write-off. Industry option on this will cut down your work, relieve you of the charge of stifling industrial advance and relieve you of the charge of ignoring inflation. What's more, you ultimately will get the same tax take, just spread over a different period of time."

The tax man shook his head. "But you may not hold that machine for ten years after the depreciation reserve is gone. You'll buy a new machine with a new depreciation schedule to charge against income."

Lawson did pound the table this time. "You still won't lose much, if any, revenue. I buy a machine to make more money. That means my income is up and so are my taxes."

Lawson and other industrialists use the same argument to show that the government can lose nothing by permitting taxpayers to use either length-of-life or production as a basis for depreciation. Length-of-life depreciation is figured strictly on age, regardless of output in the year. A production basis is figured on the work equipment can turn out. Not all industries will want to or should use the production basis. But for those who do use it, the problem of what to do about depreciation in years of no profits is partly solved. In years of loss, the equipment doesn't produce as much, so less depreciation can be claimed, and the depreciation reserve remains intact or nearly so for claims against it in profitable years when the equipment is used more.

Industrialists think they should be permitted great-

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er latitude in picking their own accounting methods to get greater depreciation in the early years of equipment. They believe they should be permitted to use one accounting method and depreciation base for one class of equipment and another for another class. They must stick to whatever schedule they set up—except in cases of extraordinary obsolescence. They think, too, Congress should consider legislation liberalizing present restriction on unusual obsolescence.

Industry, too, must clean up its own backyard

Benefits accruing from a taxpayer's option in fixing his own depreciation rates are:

1. Shorter write-off periods lessen the chance that a great price shift will twist the taxpayer's replacement program.

2. Industry—not a government agency—can be the judge of how long equipment should be used.

3. Industry will not have to worry about BIR coming in to reallocate remaining depreciation. Now, BIR has the right to come into your plant where you have some equipment that's all but, say, 20 per cent depreciated. BIR can have its engineering staff determine how much more life that equipment has. If it wants to, the bureau can prorate the remaining 20 per cent, not over the four or whatever remaining years the original schedule called for, but over any length of time it chooses. The only recourse any company has is to hire its own engineering firm—at a price—to come up with a rebuttal. Now, that is often not worth the trouble and expense.

4. Less work for BIR should mean faster audits.

5. Technological advance would be stimulated.

6. Greater profits—and also greater taxes for government—may stem from the technological advance and from an economic climate freer of government controls.

What You Can Do

Congress isn't the only one that can help the depreciation problem. You, too, can do something. Here's how:

1. Make a review of your buildings and equipment. Find whether the period of life assigned to the item is in accord with Bulletin F, and if not, whether the life assigned can be supported by factual data. The law permits depreciation "allowed or allowable." Failure to claim that which is allowable may result in loss of depreciation deduction; the claiming of excessive depreciation may result in audit adjustments and expensive tax assessments.

2. Watch market trends, competitive changes and technological advances so that claims for unusual obsolescence may be made in the proper year.

3. Start a continuing re-equipment program.

"American industry is well equipped—nuts!" So say many capital equipment manufacturers. What is true is that American industry is better equipped than that of the rest of the world.

A survey by MAPI reveals: "The typical company has no regular procedure for reappraising the remaining life of equipment and revising its depreciation rates accordingly." Too many U. S. industrialists have no records, no program. They know the age of a machine only because they bought it the same year Bill Jennings died, back in 1904.

How do you know when to replace a machine? Many formulas have been devised to aid you. Three have been set up by: American Society of Tool Engineers, National Machine Tool Builders Association and Machinery & Allied Products Institute. The latter two have the widest applications.

NMTBA's is a simple method of computing only those savings in labor afforded by the purchase of new equipment. A detailed explanation of the method may be had from "Computing Return on Invested Capital," a booklet issued by NMTBA, 10525 Carnegie Ave., Cleveland 6, O.

The MAPI formula is a scientific approach to the matter. It takes into account all factors—not just labor savings—involved in re-equipping. Derivation of the formula may be found in *Dynamic Equipment Policy* by George Terborgh, for sale by MAPI, 120 S. LaSalle St., Chicago 3, Ill. A companion volume valuable in setting up and administering a re-equipment policy is *MAPI Replacement Manual.*

Here's how whatever formula you pick can be used: Charge a man or men in your plant with the duty of knowing what machines the company cannot afford not to buy. It's the job of the man to know what's on the market by keeping abreast of developments reported in business magazines, at trade shows and by machinery salesmen.

Equipment that is suspect can usually be easily spotted: If the work turned out is poor in quality; if unusually heavy repairs are necessary; if better equipment comes on the market; if the machine is old. As a general policy, at least a preliminary check should be made continually on every piece of equipment in the plant. Records on all equipment are necessary. Records serve two purposes—help your re-equipment program and serve as support for depreciation tax claims. A card for each machine should at least give date of purchase, price and expected life.

The Bruce Lawsons of industry have two related problems: To establish a forward-looking re-equipment program and to convince government that a more realistic tax philosophy on depreciation is essential if industry is to finance and administer such a program.

You can avoid technological stagnation: By pressing for government reform in depreciation policies; by tidying up your own backyard and by adopting a wise and forward-looking re-equipment policy.

Celler Steel Probe: From Lion to Lamb

Industry public relations triumph to turn the tone of the investigation from acrimony to affability. Subcommittee recommendations are likely to be temperate

WHAT started out to be a slam-bang fight ended with the major opponents exchanging compliments.

Rep. Emanuel Celler (Dem., N. Y.), chairman of the House Judiciary subcommittee examining economic power in the steel industry, thanked U. S. Steel Corp. President Benjamin F. Fairless "for your patience under what must have been a most tiring ordeal." Mr. Fairless said "this has been the best-conducted hearing, so far as permitting us to make our presentation and so far as fair treatment, that I have ever witnessed."

Stellar Performance—Steel industry public relations—once called "deplorable" by Sen. Ralph E. Flanders (Rep., Vt.)—triumphed to turn the tone of the investigation from acrimony to affability. At one early stage, Mr. Fairless was talking of going from "O'Mahoney's doghouse to Emanuel's cellar." C. M. White, Republic Steel Corp. president, at one point complained of being pushed around and being tried and judged "by innuendo."

The steel industry turned the trick by detailed and well presented testimony and by sending an array of top officials to answer subcommittee questions. U. S. Steel, alone, mustered about 30 executives.

Backing Down—What kind of a policy toward big business will the subcommittee recommend? How effective has the public relations job been? Mr. Celler hinted that the investigation had not followed the course he expected when he said "I may have, and later may indicate, a different approach to this problem" of bigness. Now, to get a majority of the subcommittee to support his views, he must tone down his recommendations. At the start of the hearings, he said he wanted an amendment to the antitrust laws that would permit the government to break up all large corporations possessing, in his words, "too great economic power for the public welfare."

Now he says, "I would deprecate the breaking into pieces of an efficiently run company. I would oppose the placing of arbitrary limits upon size. I would oppose regarding U. S. Steel or similar corporations as public utilities. I would oppose government regulation by fixing prices or production of a company like U. S. Steel."

Mr. Celler would not indicate what legislative proposals he favors for control of "too great economic power."

NEA

MOROCCAN MANGANESE: This native Berber laborer shovels the soft, powder-like manganese ore at Imini pit in the great Atlas mountains in French Morocco. In operation less than two years, the pit is producing nearly 200,000 tons of ore yearly. The U.S. State Department hopes to begin more of these mines partly as Point Four aid, partly to insure an adequate supply of the metal

Ore Needs Cited in Seaway Plan

Dwindling domestic iron ore resources may mean that Congress will at last approve funds for the St. Lawrence seaway.

In the current hearings on the subject before the House Public Works Committee, spokesmen from Commerce, Interior and Defense departments and representatives of Republic Steel Corp., Armco Steel Corp. and M. A. Hanna Co. all urged approval of the waterway project to provide cheap transportation of foreign ore to the Great Lakes ports. They dwelt particularly on the need for a seaway to permit the movement of Labrador-Quebec ore to the Great Lakes in time of war. Other proponents of the project—labor unions, farm groups and port authority people—will testify through May 10. After that, at a time not yet set, opponents of the plan will be heard.

The committee is considering the Dingell bill providing for both deep waterway and power development. The measure should be on the House calendar by the end of May. In the Senate, the Foreign Relations Committee has done nothing so far with the Lucas bill that also calls for waterway and power development. The Senate committee will probably let the House act first.

First Ore Shipment Arrives

The first cargo of Lake Superior iron ore to be received at a lower lakes port since the close of the 1949 shipping season was unloaded May 2 at National Tube Co.'s Lorain, O., docks. Pittsburgh Steamship Co.'s steamer *Clyde* brought in 12,535 gross tons of ore. The vessel left Two Harbors, Minn., on Apr. 28. Both National Tube and Pittsburgh Steamship are U. S. Steel Corp. subsidiaries.

Cheap Steel Offered in Canada

Overseas steel producers are offering pig iron and rolled steel products on Canadian markets at prices below domestic levels, says H. G. Hilton, president of Steel Co. of Canada Ltd. He points out that Canadian prices are less than the laid-down cost of these products if imported from the United States.

Despite that situation, he says "the demand for steel products should be very good for at least several months."

Shining Decade

Production of steel ingots as a whole has increased a good deal in the last ten years, but the growth isn't so substantial when compared to the output of stainless steel ingots.

In 1949 there were 450,000 net tons of steel ingots cast—more than twice as much as in 1939.

Metal Powder Ass'n Officers

Officers of the Metal Powder Association for the coming year are: President, B. T. duPont, sales manager, Plastic Metals Division of National Radiator Co.; vice president, T. L. Robinson, Wel-Met Co.; chairman of the board, W. P. Schenck, superintendent of the Scrub Oaks Division of Alan Wood Steel Co. New directors elected were: H. W. Fischer, American Electro Metal Corp. and T. L. Robinson. E. P. Palmer, Metals Refining Co.; F. F. White, S. K. Wellman Co.; and W. P. Schenck continue as directors of the association.

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Tool Sales Up but Not to Boom Stage

Orders now exceed shipments, machine tool builders hear at Chicago convention. Government's depreciation policies hit as retarding industrial modernization

CURRENT upswing in machine tool orders is not a boom, but volume is encouragingly higher. This is the appraisal by David Ayr, president, Hendey Machine Co., Torrington, Conn., and president of the National Machine Tool Builders Association at the group's spring meeting at the Edgewater Beach hotel, Chicago, May 4 and 5.

In March, machine tool bookings amounted to $31.7 million.

Last fall, said Mr. Ayr, machine tool shipments were exceeding sales. Today, sales are exceeding shipments. The amount is not large but the trend is definite.

Sell for Replacement—"It is evident that we were right in choosing replacement as the big sales theme for 1950. Some plant expansion plans are in the offing, of course, but they are not large in number. Existing conditions simply do not encourage new capital ventures. By contrast the need for cutting cost to meet competition and growing realization of degree of obsolescence of present equipment are making more and more machine tool users replacement conscious. Replacement has been the main theme of our association's public relations and sales and service committees' efforts lately. At long last our country's metalworking industries are thoroughly and constructively cost conscious."

U. S. Retards Modernization—Present depreciation procedures of the Bureau of Internal Revenue are "retarding modernization and adding daily to the obsolescence of the nation's productive equipment," charged L. D. McDonald, vice president of Warner & Swasey Co. and head of the NMTBA's government relations committee.

"The danger of this situation from the standpoint of possible war is obvious. But even more severe is the threat to our domestic economy."

A new advertising committee for the association was announced by Tell Berna, general manager. This group will help advertising managers of member companies to improve their copy and tie it in more effectively with projects sponsored by the association's sales and service committee. It will help the whole industry advance along a united front marketwise, says Mr. Berna.

Calls for Modernization—W. Scott Alter, president, American Tool Works, Cincinnati, issued an appeal for action in what he calls the equipment crisis.

"Any company," said Mr. Alter, "can be financially solvent and still become mechanically bankrupt if money squeezed out of sharp economy is dissipated in unwarranted dividends, excessive inventories and various other unprofitable extracurricular activities." He advocates equipment modernization to bring these benefits: Larger quantities of less costly goods; greater national security; increase in the output per man without adding to his physical effort; a finer, more accurate and more easily repaired product.

The meeting attracted 250 representatives from 186 member companies, including press manufacturers.

Foundrymen Meet in Cleveland

About 250 companies will exhibit more than $2 million worth of foundry equipment and machinery at the American Foundrymen's Society congress and show in Cleveland Public Auditorium, May 8-12.

The congress will feature some 85 technical papers. The five-day program also includes visits to two foundry pattern shops and 14 of Cleveland's 106 foundries.

Sessions will be devoted to the problems of management, technical control, production and materials in steel, malleable, gray iron and nonferrous foundries. Technical meetings will cover patternmaking, sand research and control, foundry refractories, plant and plant equipment and time study and methods.

William W. Maloney, secretary-treasurer of AFS, is in charge of the congress and show. Northeastern Ohio Chapter of the AFS is host to the national meeting. Chapter chairman is William G. Gude, managing editor, *The Foundry*.

Warehousemen Elect Officers

Officers of the American Steel Warehouse Association for the next year are: President and secretary, Walter S. Doxsey; vice presidents, W. H. Franklin, Edgcomb Steel Co., Philadelphia, and Wayne Rising, Ducommon Metals & Supply Co., Los Angeles; treasurer, Paul O. Grammer, Dempsey & Hudson Inc., Newark, N. J.; chairman, executive committee, L. B. Worthington, U. S. Steel Supply Co., Chicago.

Also named at the concluding business session of the 41st annual meeting of the association in Houston were the following directors-at-large: Lester Brion, Peter A. Frasse & Co. Inc., New York; F. C. Flosi, A. M. Castle & Co., Chicago; L. B. Worthington; and, Marvin B. Marsh, Marsh Steel Corp., Kansas City.

The convention was attended by more than 600 members and guests.

Tie Plate Business Poor

Republic Steel Corp. will discontinue manufacture of railroad tie plates at its Dilworth Porter Division in Pittsburgh. Tie plates constitute the entire production of the plant.

Republic will fulfill its present commitments for tie plates by Sept. 1. Studies will be made to determine if there is some other product that can be made or operation that can be conducted profitably in the present facilities. The warehousing operations at the plant will be continued.

For the past year the plant has operated at less than 50 per cent of capacity. The outlook for the remainder of the year is poor.

Crane To Build Furnaces

Invasion of the warm air furnace field is being planned by Crane Co., Chicago. Its furnace, to be known as Jet-Heet, will be introduced in the near future but volume production is not scheduled for this year.

Several departures from conventional heating systems are embodied in the new unit. One of these is the elimination of the usual type of ductwork. Heated air will be distributed through 2-inch diameter insulated tubes. Flexible, this tubing will be easier to install and will permit lower building costs. Heat loss of the air while in the tubular ducts is reduced to "practically zero," Crane engineers say.

Another innovation is the velocity and temperature of the air moving through these tubes. The system operates at five times the pressure of a conventional warm air furnace. Temperature of the air in the tubes is 350 degrees. It is slowed down and mixed with cooler air in room outlets, which can be located either high or low in the wall. No cold air return system is necessary.

Claimed for the new unit is high thermal efficiency, fuel economy of possibly 30 per cent over conventional furnaces. It makes use of special heat-resistant materials, both metals and refractories, and some jet-engine combustion principles.

New Auto Records Coming

Chrysler peace to shove output above previous highs. Union gains little by stoppage

LOOK for some new weekly auto production records now that the 100-day Chrysler strike has been settled. Even with the second largest producer closed since Jan. 25, auto output has been threatening the old mark of 160,173 set in week of July 23, 1949.

Chrysler suppliers are recalling furloughed employees and are preparing to step up operations. Budd Co., which builds Chrysler bodies, called back 1100 workers as soon as the settlement was announced May 4. Midland Steel Products called back 1800.

Chrysler is eager to resume full-scale operations and attempt to make up some of the production lost since the strike started.

What Was Won — Actually, the union won little from the strike. Chrysler had offered $100 monthly pensions before the walkout. That's what the union finally got. Chief point gained by the union is that the company agreed to set up a trust fund to be jointly administered. Earlier the company held that its "good faith and credit" were guarantees enough and that that was all other companies had provided in setting up pension programs.

The company is not required to pay any specified cents-per-hour amount into the fund but is pledged to keep it actuarily sound.

Retirement Age — Settlement provides $100 pensions, including social security, for employees with 25 years' service at age 65. Employees may continue working until 68, or later with company consent.

Settlement also provides for contributory social insurance.

Pension and insurance provisions are part of an overall contract. Pension provisions run for a period of five years. The overall contract runs for three years, with provision for reopening for wage rate negotiations once after July 1, 1951, and once after July 1, 1952.

Steel of Canada Hikes Wages

Steel Co. of Canada Ltd., Hamilton, Ont., and United Steelworkers of America—CIO-CCL have settled their differences.

The union won a 40-hour week, a 13-cent wage increase spread over two years and a voice in the company's pension plans. The settlement, still to be ratified by the union membership, reduces the work week from 44 to 40 hours. A general increase of 8 cents an hour, raising the base rate to $1.12 an hour, is effective as of Apr. 1, 1950. A second boost of 5 cents an hour takes effect Apr. 1, 1951. The union accepted the firm's pension plan which has been operating since 1920. It provides an average of $50 a month to workers, 65 or over with 25 years' service.

NEA

TREATED LIKE A BABY: Westinghouse Electric Corp., Pittsburgh, is playing midwife to jet alloys these days. One of its turbo triplets is born here in this high-frequency furnace at the Westinghouse Alloy Laboratory. The molten alloy is poured into a ladle before being cast into ingots. No fuel, electrodes or other contaminating matter comes into contact with the alloys as it sees the light of day. Heat is applied by electromagnetic waves beamed from a copper coil surrounding the furnace shell. Exactly the right temperature must be reached before it can be poured into molds

March Strike Losses Drop

Strike idleness during March, 1950, dropped to less than half the February total, says the Labor Department's Bureau of Labor Statistics. The decline from 7,850,000 man-days idle in February to 3,750,000 in March followed the coal strike settlement.

About 530,000 workers were involved in the total of 400 stoppages in effect in March; 515,000 were involved in 325 stoppages in February.

Craft Unions at Kaiser Barred

The National Labor Relations Board will not carve out separate collective bargaining units by crafts in the aluminum processing industry "because there exists in that industry a degree of integration and interdependence of maintenance employees with the production process that is not customarily found in other industries." The board has made similar decisions regarding the basic steel-producing and lumber industries.

CIO Wins at Westinghouse

The CIO's new electrical workers' union will control the majority of Westinghouse Electric Corp. workers. In bargaining elections held in the company's plants, the International Union of Electrical Workers was victorious over the left-wing United Electrical Workers, which was kicked out of the CIO last fall for communistic leanings in a close vote.

The IUE-CIO claims it will represent 41,155 workers, compared with 12,819 for the UE. The IUE figures may be somewhat optimistic because elections in several plants were so close that a recheck may change the results. A preliminary count by the National Labor Relations Board gave control of 20 plants to the IUE and 20 to the UE, with several in doubt. The IUE is expected to control the larger units.

Westinghouse says it will maintain the status quo on policies governing employee relations until May 31 or until the various bargaining units are certified by the NLRB.

They Like It at Cleveland Cap

A remarkable record of employee longevity was highlighted at Cleveland Cap Screw Co.'s fifth annual service pin presentation party. J. W. Fribley, president and cofounder of the Cleveland concern, revealed that latest additions to the company's veterans group bring the number of employees with five or more years' service to 65 per cent of the total payroll.

UNIVERSITY OF MICHIGAN LIBRARIES

Windows of Washington

By E. C. KREUTZBERG *Washington Editor, STEEL*

At least half a billion more dollars will be appropriated for preparedness for fiscal 1951. It will be spent on military hardware, mostly planes

THE COLD WAR is no longer leaving anyone numb about the matter of military preparedness.

Republicans in Congress will have a good deal to say about military spending when Chapter X of the 11-chapter omnibus appropriations bill comes up in the House. And they're sure to ask one question: Why weren't the funds Congress voted last year spent on building up American air power? It is highly improbable, though, that they will vote against defense funds. More than likely, they'll vote for all the dollars the Joint Chiefs of Staff want now. How much does that mean?

Military Expenses of $14 Million—It means at least a half billion more dollars. It will bring military expenses for the fiscal year beginning July 1 well above $14 billion. That, roughly, was the appropriations figure in 1949. What will it buy?

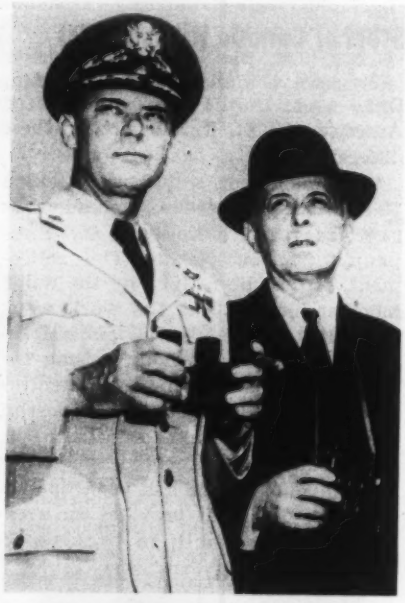
It'll buy military hardware. It will give Adm. Forrest P. Sherman a chance to build up his cut-back Navy. Mostly, though, it will give Air Force Secretary Thomas K. Finletter more money for planes.

They Knew What They Wanted—You can get some idea of how congressmen feel about military spending from what happened two weeks ago:

When Defense Secretary Louis Johnson voiced the Administration request for $350 million—all but $50 million for aircraft—the House Appropriations Committee voted it within an hour and a half of the time he asked for it.

A half billion dollars (the $350 million plus $200 million originally slashed by the committee and almost certain to be restored), says Mr. Johnson, is only the beginning. A re-evaluation of the cold war—from last summer's A-bomb explosion in Russia to the scheduled young Communist march on Berlin late this month—has the defense department recanting. Tacitly it is admitted that a mistake of at least half a billion dollars was made in the January budget estimate. If relations between Russia and the U. S. continue to deteriorate, the error may have been bigger.

Symington's Work Cut Out for Him—Internal defenses will get increased attention, too. W. Stuart Symington's appointment as head of the National Security Resources Board carries enough weight to do just what his appointment was meant to do: Step up and get attention for an arduous task, economic mobilization.



VANDENBERG AND FINLETTER
. . . get more money for planes

$11 Million Quartermaster Lab

The site for the $11 million Army Quartermaster Research Laboratory that is to be specially equipped to test, develop and do research on military items made of metal will be chosen by a six-man committee.

It was named by William Webster, new chairman of the Research and Development Board. The committee members: Chester A. Alter, Boston University, Boston; H. S. Coleman, Mellon Institute of Industrial Research, Pittsburgh; Donald H. Loughridge, office of the assistant secretary of the Army; Gilbert Scribner, Winston & Co., Chicago; John J. Traynor, Mutual Life Insurance Co., New York; and Blake R. Van Leer, Georgia Institute of Technology, Atlanta.

Interested in Mobilization?

If you're at all concerned with questions about industrial mobilization planning, you'll be interested in a newly revised book, "Munitions Board Membership Directory of Councils, Agencies and Committees."

It gives all such bodies and identifies their functions. In it are addresses and telephone numbers of individuals in key spots in industrial mobilization planning. Some 700 industrialists who are members of industry advisory committees and about 375 Army, Navy, Air Force and government officials are included. Copies are available. If you want one, write to the Committees and Publications Branch, Administrative Office, Munitions Board, Department of Defense, Washington 25.

Warehouse Practice Course

Courses in warehouse practices of the armed services are to be conducted again this year. Businessmen may participate in them on a voluntary basis.

The courses will be conducted at 50 military depots throughout the country and are scheduled to last about four days. A list of the participating installations, and of scheduled dates, may be procured from:

Chief, Storage Division, Munitions Board, 2E825 The Pentagon, Washington 25.

British Slag Man Arrives

L. G. Clugston, Clugston Cawood Ltd., Scunthorpe, England, will arrive in the United States May 22 for a tour of blast furnace slag processing plants. His firm is a leading slag processor in Great Britain. Mr. Clugston can be reached in care of the National Slag Association, 644 Warner Bldg., Washington.

Two Bills Ready for Action

Two bills of interest to business are about ready for the president's signature: The National Science Foundation bill and the Rivers and Harbors and Flood Control bill.

The latter bill authorizes $1454 million. Conceded to be a pork barrel, it rolled roughshod over an economy drive in the House.

A compromise version of the science bill calls for an FBI check on employees handling classified information but provides that the foundation shall evaluate the FBI information and give the actual security clearance.

Every scholarship and fellowship

holder will have to sign an affidavit saying he does not belong to a subversive organization. He'll take a loyalty oath similar to that taken by military officers, members of Congress and other government employees.

In the bill is a provision that the Atomic Energy Commission and the National Defense Establishment shall apply their own security regulations to any foundation researchers who handle information restricted by those agencies. The bill meets the President's administrative requirements in providing for a director appointed by the President and approved by the Senate.

FTC To Expedite Case Handling

In another move to expedite disposition of cases, Federal Trade commissioners will give increased recognition to the recommended decisions of trial examiners.

Beginning June 1, these "recommended decisions" will be termed "initial decisions." The "initial decisions" will become final "commission decisions" in 30 days—unless: 1. Counsel supporting the complaint, or the respondent or respondents, appeal for further hearing. 2. The commission, on its own initiative, places the case on its docket for review. 3. The commission for any reason decides to stay the effective date.

The new arrangement is expected to save many months of delay in run-of-mine cases. If the commissioners themselves were to review every case, it would take up a lot of their time. Legal departments of interested companies can get from the Office of Information, Federal Trade Commission, Washington 25, copies of an Apr. 28 press release, "FTC Authorizes Trial Examiners to Make Initial Decisions." It tells about the new policy.

GSA Approves Public Works

Public works loans to 25 communities, to be repaid when construction begins, were approved by the General Services Administration. Largest projects and their estimated total construction costs are: School facilities at Indiana University, Indianapolis, $1,141,547; schools at St. Louis, $5,173,500; sewage facilities at Youngstown, O., $5,405,800; Territorial office building, Juneau, Alaska, $1,260,000.

Aluminum Alloy Pipeline Coming

To permit actual experience with an aluminum alloy pipeline, the Federal Power Commission authorized the Alabama-Tennessee Natural Gas Co. to construct a 9500-foot lateral line to serve the Reynolds Alloy Co. plant at Listerhill, Ala.

The line, to be built of aluminum alloy at the request of the Reynolds company, will cost $6300 more than if steel were to be employed, say FPC spokesmen. FPC's approval was based on the feasibility of the alloy for the particular line.

Export Office Cutting Down

Notices of dismissal were issued to another 130 employees of Commerce Department's Office of Export Control—bringing to 230 a staff that numbered 1300 two years ago. Reason: Gradual abandonment of export control—except for military commodities still under ban for Iron Curtain destinations.

Businessmen Fight Plan No. 5

Secretary of Commerce Charles Sawyer assures everyone that he will not reduce the independence and authority of the patent commissioner in the slightest if President Truman's Reorganization Plan No. 5 becomes effective. But business spokesmen in the capital have been fighting the plan tooth-and-nail.

Mr. Sawyer, they say, is a sound man, but what if Plan No. 5 had been in effect when Henry Wallace ran the Commerce Department?

Testifying before the House and Senate committees on expenditures (both are considering Plan No. 5), George E. Polk, adviser to the Committee on Patents and Research, National Association of Manufacturers, saw in this plan "a ready means for changing the entire complexion of our patent system" and that "the authority thus vested in the secretary of commerce would enable him for political or some other motive to jeopardize administration of the Patent Office."

Other spokesmen point out that adoption of Plan No. 5 might allow the Justice Department to alter the patent system along the lines of its report of June 6, 1947 (STEEL, May 1, p. 64). Objections were raised to that report because of the narrow view it took about the government's rights in inventions by contractors working for the government.

Patent Regulations Still Being Worked On A Year Later

LAST YEAR government officials thought the tough business of drafting contract procedure for patents and copyrights had been settled. Now they're not so sure. The subcommittee on patents of the Ad Hoc Committee on Armed Services Procurement Regulation has some nagging points to round off:

1. General Motors raised the question about inventions by so-called technical personnel—employees who are expected to make inventions and who are under contract to assign their inventions to their employers.

GM posed this situation: Suppose a technical employee were inadvertently not placed under an assignment agreement. (He is then free to enter an infringement suit against the government.)

The matter was ironed out by the subcommittee on patents and GM: Now GM is to reimburse the government for any compensation paid by the government as a result of an infringement suit brought by a GM technical employee not under contract to assign his inventions. The subcommittee is thinking of extending the deviation to all contractors. It will discuss the matter with patent committees from the National Security Industrial Association, the American Ordnance Association, the Aircraft Industries Association as well as the National Association of Manufacturers.

2. To allay the unhappiness of contractors over the harsh requirements of the "classified contracts" provision of the Armed Services Procurement Regulation, the subcommittee agreed to consider recommending inclusion of a remedial section in the Celler-Tydings security bill now being formulated.

The ASPR provides that when the subject matter of a classified contract is designated as "secret" or higher, the contracting officer may forbid filing of a patent application if he thinks it would jeopardize national security. Contractors think the matter is too inelastic; the subcommittee hopes to obtain inclusion of an amendment in the security bill that will permit contractors to file applications in all cases. It might be worked out like this: The commissioner of patents would assign a filing number and seal the application for patent; it would be reviewed yearly.

3. The matter of copyright infringement has come up a lot lately. (The government may not be sued for infringement, but government employees can be and, have been sued and held liable for technical fines.

The subcommittee is thinking of asking Congress for legislation to permit the entering of copyright infringement suits against the government and specifically protecting contractors and government employees against such actions.

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$100 PER HORSE: Fairbanks, Morse & Co., Chicago, unwrapped a 4800-hp twin-unit diesel-electric locomotive that will sell for $480,000. It did over 100 mph on a test run and has a known maximum speed of 110 mph. Twenty tons lighter and 29 feet shorter than a conventional 4500-hp two-unit diesel, it can handle 28 railroad passenger cars

Freezer Division Sold

Purchase of Whiting division by Baltimore Porcelain Steel includes patents, equipment

MORTON L. CLARK, president of Artkraft Mfg. Corp., Lima, O., and Stevens H. Hammond, president of Whiting Corp., Harvey, Ill., jointly announced the purchase of the Freezer Division of Whiting Corp. by Baltimore Porcelain Steel Corp., Baltimore.

The purchase includes the entire freezer line, including all patents, dies, tools, fixtures and good will. Whiting Appliance Co. will be formed as an operating subsidiary of Baltimore Porcelain Steel to make the complete line of Whiting household appliances. The Whiting refrigerator line will, at present, be manufactured by Artkraft at Lima, but plans are underway to completely tool Baltimore for refrigeration manufacture.

Materials Handling Firm Moves

Materials Handling Equipment Co. is now occupying the new manufacturing facilities that it completed last month. The new plant and general office is 2619-59 Normandy Ave., Chicago 35.

The company, which makes elevating and conveying machinery and sheet metal products, has obtained patent and manufacturing rights to produce and sell the Uni-flo mass-type conveyor, formerly manufactured by Chain Belt Co., Milwaukee.

Aluminum Brightening Process

A chemical process for brightening the surface of aluminum articles was developed at Alcoa's research laboratory, New Kensington, Pa. The process is particularly effective on most wrought alloys and some cast alloys. It is especially suited for heavily embossed or pattern surfaces where buffing is often impractical.

The finishing technique can be conducted commercially on a licensee basis.

American Brass Spending Money

American Brass Co. is spending about $2.5 million to modernize its brass strip mill in the Buffalo, N. Y., plant. The program is scheduled for completion in the latter part of the year. It includes considerable new machinery and equipment. The plant will be able to turn out heavier coils of brass.

Bennett Opens New Plant

Bennett Machinery Co. opened its large new plant for the rebuilding, storage and shipment of machine tools for industry at Clifton, N. J. The plant is equipped to handle a large stock of machine tools of all kinds and sizes.

Kaiser To Make No Utah Change

Kaiser Steel Corp., which took over ownership and operation of Utah Fuel Co., one of the largest producers of bituminous coal west of the Mississippi river, plans no extensive changes in personnel of the firm now.

Claude P. Heiner of Salt Lake City, former president of Utah Fuel, is acting as a management consultant. Kaiser which bought the Utah company for $6.8 million, took over contracts to supply fuel to a number of Utah industries. Included was American Smelting & Refining Co.'s Garfield smelter.

Utah Fuel has 1300 workers in mines in Utah and Colorado; another 300 are employed in the Sunnyside No. 2 mine which Kaiser has leased for seven years. High grade coking coals from the Utah properties are shipped to Kaiser's Fontana mill in southern California.

Edward Valves Expanding

The new physical, chemical and metallurgical laboratories of Edward Valves Inc.—opened less than a year ago—are being increased nearly 50 per cent in size. Construction of a new unit has already begun. It will house Edward-designed special mechanical testing equipment for Edward and Nordstrom valves. Essentially all the new expansion will be devoted to testing valves and piping under fluid flow.

Columbia Sells Warehouse

The Philadelphia warehouse of Edgar T. Ward's Sons Co. Division of Columbia Steel & Shafting Co. was sold to Peter A. Frasse & Co. Inc.

Frasse is a long-established warehouse. Columbia and Summerill Tubing Co. Division are opening a Philadelphia office under Tom L. Parker, district sales manager, and will continue their activities in that area on mill shipments of cold-finished steel bars and seamless steel tubing.

Goodrich Building New Lab

Construction of an applied research laboratory—the third unit in the multimillion dollar B. F. Goodrich Chemical Co. installation at Avon Lake, O.—will begin this month.

W. S. Richardson, president, who made the announcement, says a general chemicals plant and experiment station are in operation now.

Are European Steel Cartels Inevitable?

Economic Commission for Europe says they are unless governments stop them. ECE believes that intergovernmental steel agreements can forestall private trusts

STEEL cartels in Western Europe are inevitable unless governments move to stop them. That's one conclusion in the annual report of the Economic Commission for Europe, the group seeking to co-ordinate Europe's recovery. The report is signed by Gunnar Myrdal, former Swedish minister of trade.

Mr. Myrdal suggests that a European intergovernmental commodity agreement on steel be concluded to regulate surplus production and stimulate consumption of steel in Europe. Precedence for such an agreement can be found in other commodity agreements provided for in the Havana Charter of the International Trade Organization.

Mr. Myrdal says private European steel cartels must be stopped if the area is to see a real economic growth. But a realistic approach to the problem of cartels must take into account the reasons—threatening overproduction and dislocations of markets—for the growth of trusts. Intergovernmental agreements are necessary to cope with problems that transcend national boundaries, says Mr. Myrdal.

Ruhr Steel Barred from Cartels

The Germans may be the most enthusiastic proponents of the Myrdal plan. Because of the American influence on the West German government, Ruhr steel producers can't participate in cartels.

Some German steelmen would like to because the demand for their product is slackening—at a time when they are trying to get the Allies to boost the ceiling on steel production from 12.2 million net tons to 13.8 million tons yearly. A decision on this may come at the meeting of the Big Three foreign ministers this week.

West Germany's economic situation is mildly depressed right now, partly because the government's housing and other recovery programs are not yet in high gear. Steel rolling mills have order backlogs for only two months' work, in contrast to the normal backlog of six to eight months. Steel exports are being more and more limited to specialties.

Enforcement of law No. 75 regulating the reshaping of Ruhr industry is delayed again. The preamble of the law provides that the Germans are free to decide on the ownership question of coal mines and steel plants. The British and American commissioners agree to that formula, but the French object because they fear that the Germans will nationalize and give too much economic power to their government. That difference of opinion remains the only important point to be settled. The Americans won their argument that new companies must be responsible for debts of the old companies. Because of that new provision, stock market quotations on shares in old firms rose.

Demand Falls for French Steel

Orders—particularly from abroad—are also declining for French steel. To keep their mills going, French steelmakers are cutting export prices. Some contracts have been booked at below cost.

French steel export sales total about 40 per cent of domestic sales. The best overseas steel customers are India, Pakistan and Australia.

Because of the strikes, March steel production in France slipped 25 per cent from the February level, to 722,000 ingot tons.

France at the end of the first quarter of 1950 was building 12 per cent of the total tonnage of vessels under construction throughout the world. The United Kingdom was building 40.5 per cent of the 4,684,674 gross tons under construction.

British Labor Party Hangs On

The issue of what happens to the British steel industry—private ownership vs. nationalization—still hangs fire. Although the Labor party's hold on the government remains precarious, Labor has a clear majority in Parliament of seven; it won a by-election in Scotland. That majority is probably still too weak to force nationalization.

Labor put Sir Stafford Cripps' budget though Parliament by a five-vote margin. The two issues on which the Conservatives made their challenge were the increase of nine pence a gallon in gasoline tax and the new purchase tax of 33 per cent on commercial vehicles. The higher taxes are likely to increase freight rates in Britain. Rail rates are also rising.

Steelmakers are operating nearly at capacity, sustained by demand from the auto, locomotive, freight car and shipbuilding industries. Most machine tool builders are also going full tilt. Need for rails is high because the government is pushing a railroad rehabilitation program.

British makers of small steel bars are losing export buyers because they are being undersold abroad by Belgian and French competitors.

Wide World

SMALL LUXURY: The Gutbrod Motor Co., Plochingen, Germany, calls this three-passenger automobile, which was shown at the Frankfurt Fair, the smallest German luxury car. It is equipped with a 2-cylinder, 20-horsepower engine; its speed is given at 56 mph, its gasoline consumption, about 41 miles to the gallon. The price: 5900 deutschemarks—about $1500

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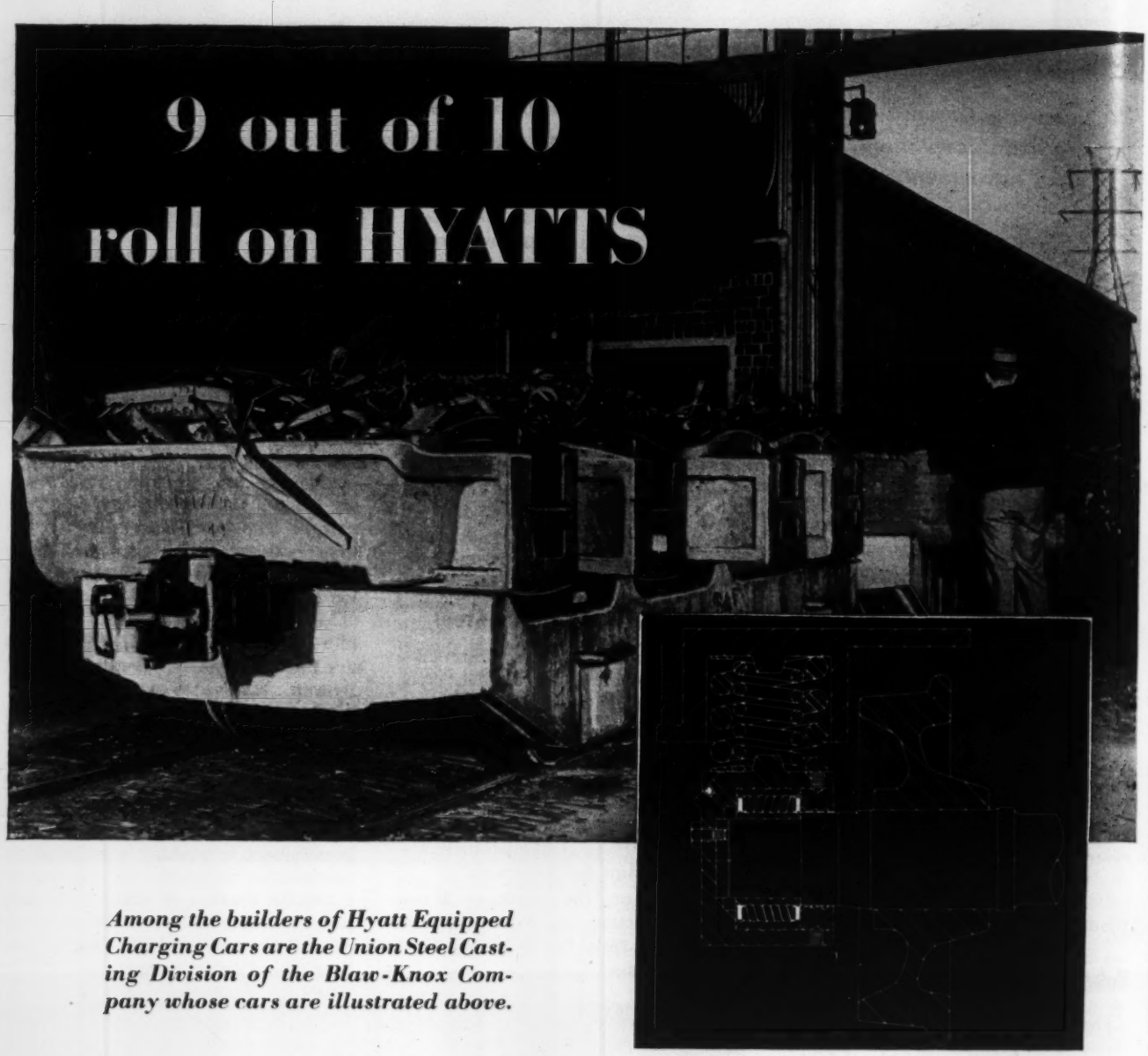
9 out of 10 roll on HYATTS



Among the builders of Hyatt Equipped Charging Cars are the Union Steel Casting Division of the Blaw-Knox Company whose cars are illustrated above.

There are many good reasons why over 90% of the ingot and charging cars are operating on Hyatt Roller Bearings.

It takes less tractive effort to move a string of cars, more cars can be handled with same amount of power, lubrication is less frequent, axle wear is reduced and axle breakage virtually eliminated.

Hyatts protect all operating equipment, no matter how extreme the conditions or heavy the loads—indoors or out.

For your cars, as well as tables, cranes, mill motors and auxiliary equipment look to Hyatt for dependable bearings. Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

HYATT ROLLER BEARINGS

By A. H. ALLEN *Detroit Editor, STEEL*

Mirrors of Motordom

Auto production continues to amaze observers. Many plants operating two shifts and others are working Saturdays. But demand continues to crowd production schedules

DETROIT

BLISTERING is the only word for automobile production as plants swing into the fifth month of 1950, many assembly lines working two shifts, others extending to 9 hours daily and instituting Saturday functioning for the first time in many years. Chrysler divisions should be rolling this week and, depending upon how many of their former employees return to work after 73 days of idleness, may be able to turn out as many as 10,000 cars and trucks. Almost without exception, field reports indicate sales are holding firmly to the current rate of production and in cases are ahead of assemblies. The result: Little chance to reinforce dealer stocks.

Chevrolet's retail deliveries through April passed the half-million mark, while production of cars and trucks totaled 630,746, against 433,780 in the same period a year ago. Even with this terrific outpouring, it is difficult to get quick delivery of a particular model in many sections of the country, especially the hardtop convertible. Nine times during the month daily volume topped 8000 units.

Maintenance Really a Problem — Buick hit a new daily high on Apr. 28 when 2738 cars were built, over 300 better than the previous record. Six months ago a normal day would see output of about 1650. The April total was 46,533 and would have passed the March peak except for three less working days. Assembly lines at Flint are running two shifts and some manufacturing departments are working around the clock, the Automatic Transmission Division being an example where operations are 24 hours a day seven days a week. The problem this created for maintenance and repair crews can be readily imagined. Machinery will break down, conveyors will jam, retooling becomes more frequent as schedules get tighter. It calls for a lot of ingenuity as far as maintenance is concerned. Buick employment, incidentally, is at an all-time peak of 24,600. Meanwhile stock of new cars in the hands of dealers has declined better than 50 per cent in the last 60 days to the year's low.

Changeover Delayed—Upshot of the strong production and sales situation throughout all the General Motors family is that the changeover to 1951 models has been pushed back several months and may be as late as December. Parts releases already have been issued to cover August production and there is no indication these will be the final 1950 releases. The thinking is that as long as cars and trucks are moving at a record clip and it continues impossible to build dealers' stocks to anything approaching normal, why hurry to complete preparations for a model change.

It is understood the central tool and die plant of Fisher body in Detroit has reverted to single-shift operation and the production pace decelerated. About 50 diemakers quit recently to take jobs at Ford.

Hudson Sales Up

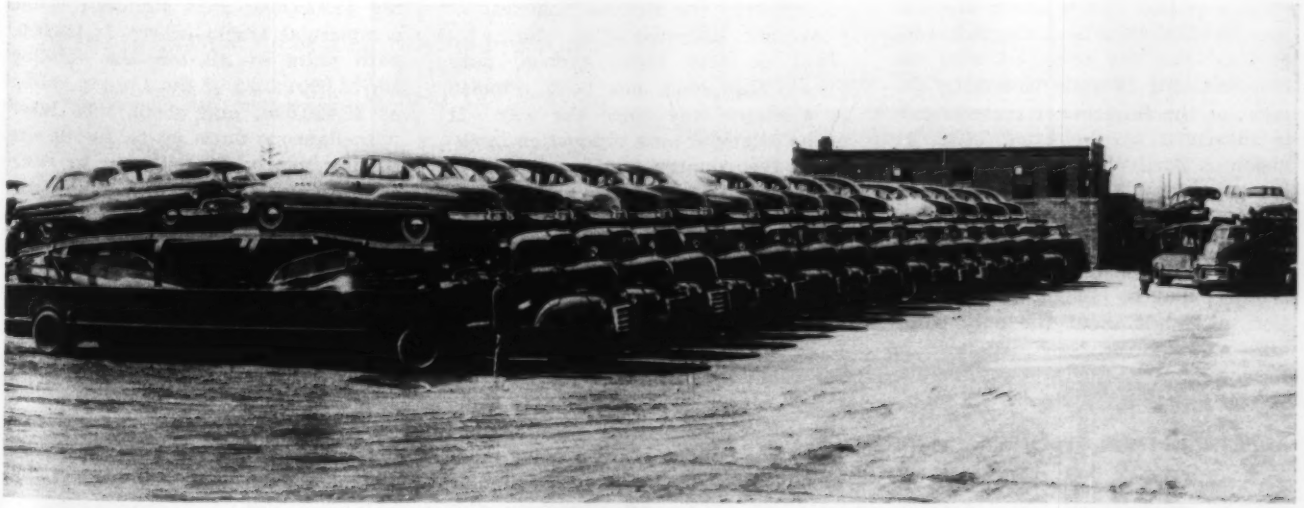
Hudson has found encouragement from sales reports in April, the week ended Apr. 21 for example showing deliveries of 4112, or 14 per cent over last year. Assemblies have been averaging a little over 3000 weekly, so it can be inferred the difference came out of dealer stocks which have been more comfortable than is the case with other makes. Current production is off about 16 per cent from the level at this time last year.

Output Trails Sales

Packard likewise is more cheerful over the sales picture. April deliveries were a little better than 8000, against plant output of 5900. Assemblies continue on a four-day basis, with 8300 on employment rolls. A summer changeover to 1951 models is regarded as certain.

Starts Two-Shift Operations

The Lincoln-Mercury assembly plant at Metuchen, N. J., has started



WHAT A DIFFERENCE A DAY MAKES: One hour's production of new Buicks starts to leave Flint, Mich., as the dispatcher checks them out. Despite expedited shipments on a seven-day, 24-hour schedule, Buick sales for the past two months have run increasingly ahead of record-breaking production. Assembly plants outside Michigan, supplying dealers in their specific areas, have a combined production that exceeds Flint's

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UNIVERSITY OF MICHIGAN LIBRARIES

two-shift operations, marking the first time that a Ford Motor Co. major assembly plant has gone on double shifts in more than ten years. About 750 additional employees were hired.

Ford Encounters Delays

Delays have been encountered in the new Ford transmission plant at Cincinnati, principally because of slower progress than expected on the building construction. However, in recent weeks a large part of the production and supervisory staff has transferred from the Ford Mound road plant here to the Ohio city.

Last week two new engineers were added to the staff working on the Ford transmission. One is H. G. English, formerly in charge of engineering development at the Borg-Warner laboratories, Bellwood, Ill., and prior to the war active with Oldsmobile in development of the Hydra-Matic transmission. The other is V. J. Jandasek, who was assistant to Mr. English at Borg-Warner and had earlier experience with International Harvester, Packard, Detroit Transmission Division of General Motors and Bendix Aviation. Both will serve on the staff of R. F. Kohr, research engineer, assigned specifically to the Ford-Mercury automatic transmission.

Tooling and equipping of Ford and Borg-Warner plants for the new automatic transmission has been productive of an important volume of new equipment business, plus incidental tools, dies, jigs and fixtures. The same was true earlier in the case of the Studebaker automatic drive, being built by the Detroit Gear Division of Borg-Warner. Fair production of this unit is under way and most dealers have been sampled with at least one car equipped with the transmission. Torque converter element of the Studebaker transmission is furnished by the Long Mfg. Division of Borg-Warner here. Reports are heard that Long now has in production a similar type of torque converter, but of much smaller size. Inference is that some other auto manufacturer may be moving in this direction, although about the only possibilities would be Nash, Hudson, or Kaiser-Frazer.

Tanks Roll from Arsenal

Extent of current production of combat tanks and related military vehicles at the government's $70 million Detroit Arsenal is not generally realized. The plant this year will turn out tanks costing more than $100 million and at the present time is turning out 45-ton M-46 General Patton tanks, mounting a 90-millimeter rifle, at a rate of four a day, in addition to reconditioning smaller 25-ton medium tanks at a rate of two a day. The latter figure will be stepped up to four a day by summer.

About 5000 production workers are busy at the 27-acre arsenal, in addition to a staff of some 600 engineers in the experimental section, working on newer and more powerful mobile weapons and equipment. A group of 50 buyers in the purchasing department is actively placing orders for the many thousands of materials and parts required in building and reconditioning the various vehicles.

Arsenal Retooled—The plant, located on Van Dyke avenue, near Eleven-Mile road, has been retooled in a major way since the war. It is the principal tank production facility in the country and is in addition responsible for the design and development of all prime movers used by the National Military Establishment, including the Army, Navy, Marine Corps and Air Force. These vehicles are built up by hand in prototype form at the arsenal and production contracts are ultimately farmed out to industry. Standardization is being carried out as far as possible, and every engineering effort is being made to develop basic power plants, running gear and parts of interchangeable nature for all heavy vehicles.

Continental Builds Engines — The M-46 General Patton tank, largest ever to be put in production, is powered by an 800-horsepower 12-cylinder Continental engine of the V. type and air cooled. It was designed especially for this tank and Continental Motors at Muskegon, Mich., has been busy for some months filling a production contract for these engines. The tank transmission is of the torque converter type.

On property adjoining the arsenal is an accumulation of about 1000 medium tanks salvaged from the war, all of which will be completely torn down, cleaned, repaired and refitted for shipment either to U. S. forces or those of western European nations. Considerable quantities of new materials and parts are required for this job.

Commanding officer of the arsenal is Col. D. J. Crawford; executive officer Col. George W. White; chief of production Col. Rodney E. Hanes; chief engineer Col. J. M. Colby; chief of stock control Col. W. H. Connerat.

Services Buy Trucks — Meanwhile Washington advices indicate the military appropriations bill for the fiscal year beginning July 1, now under study by a House committee, lists proposed purchases of passenger cars and trucks for the three services totaling better than $92 million and covering approximately 27,000 vehicles. Most of them are trucks and the entire lot would constitute less than a week's production at current rates by truck builders.

The Army is the largest buyer as a result of its program to scrap overage vehicles and replace them with new models. Now in this country are 27,000 units, of which 23,000 are over six years old. It is proposed to build the number up to 37,000. Contemplated purchases include 1000 passenger cars costing $1,219,000; 100 busses of 37-passenger capacity costing $1,410,000; 3474 standard ½-ton commercial trucks worth $4,453,000; 2615 units of 2½-ton size totaling $6,734,000; 1325 of the 1½-ton rating at $2,430,000; and about 1000 other miscellaneous units up to 10-ton size costing nearly $4 million. In addition, Army Ordnance proposes to buy 3467 jeeps worth $9,332,000; 3285 of the 2½-ton trucks costing $21,101,000; 1752 of the ¾-ton trucks priced at nearly $8 million, and 562 heavy 5-ton jobs worth $8,612,000. In all, this amounts to about $67 million.

The Air Force is planning to scrap some 21,000 of its trucks and buy 6800 new units, valued at $25 million. Further it will buy 401 busses, 470 passenger cars, 910 trailers and 27 ambulances.

Sticking to its water-borne traditions, the Navy will buy only 304 new vehicles costing $639,000, and to ease that figure will turn in 226 old units.

Auto, Truck Output

U. S. and Canada

	1950	1949
January	610,211	445,092
February	504,954	443,734
March	609,463	543,711
April	582,000*	569,728
May		508,101
June		623,689
July		604,351
August		678,092
September		657,073
October		601,021
November		474,731
December		384,318
Total		6,533,641

Weekly Estimates

Week Ended	1950	1949
April 15	147,657	131,821
April 22	151,613	141,227
April 29	146,554	136,728
May 6	152,000	130,113

Estimates by Ward's Automotive Reports

* Preliminary.

THREE-WAY SAVINGS with our Udylite AUTOMATIC PLATING EQUIPMENT

REPORTS WIRE-O CORPORATION
MAKERS OF MECHANICAL BINDINGS

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Prior to installation of their Udylite Full Automatic Plating Machine, Wire-O Corporation made loose leaf metal parts from expensive nickel-plate steel. Now, they produce these parts from raw steel and plate them after fabrication—eliminating buffing and polishing processes . . . and giving a much higher production rate with lower labor costs.

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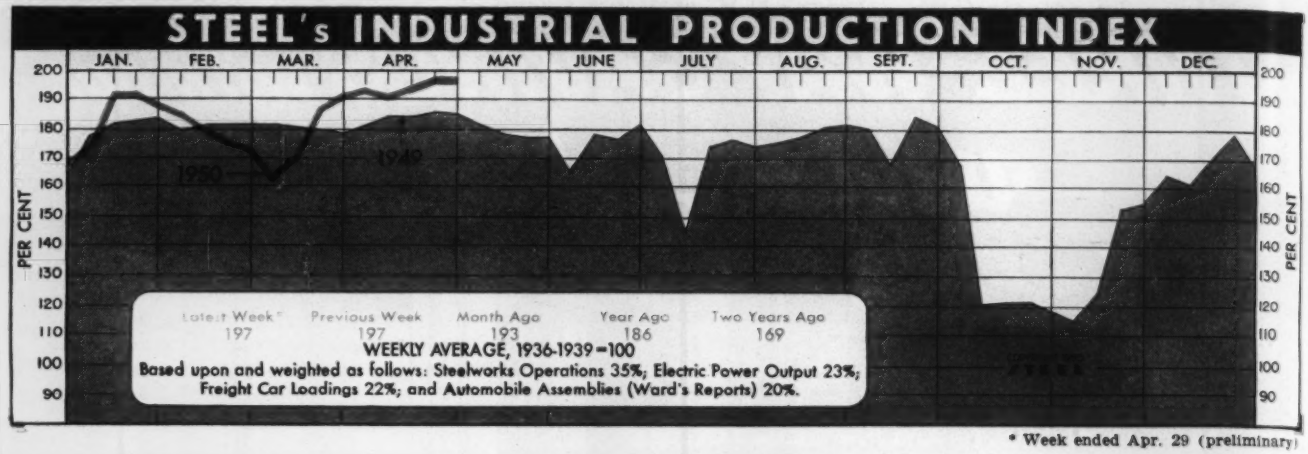
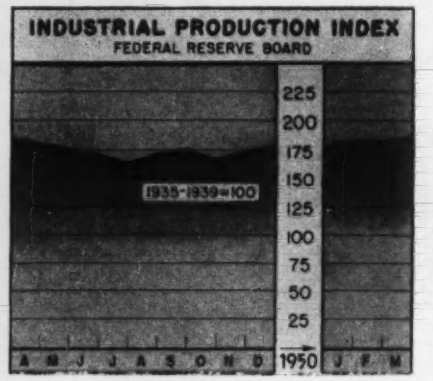


* Week ended Apr. 29 (preliminary)

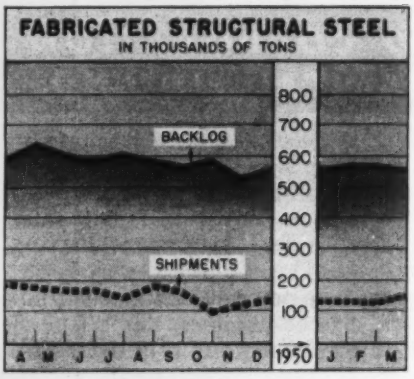


Charts—Copyright 1950, STEEL

Industrial Production Indexes

	Total Production		Iron, Steel		Non-ferrous	
	1950	1949	1950	1949	1950	1949
Jan.	183	191	203	228	179	184
Feb.	181	189	201	232	182	185
Mar.	186	184	...	233	...	183
Apr.	....	179	...	219	...	168
May	....	174	...	204	...	145
June	....	169	...	177	...	132
July	....	162	...	156	...	128
Aug.	....	170	...	178	...	141
Sept.	....	174	...	179	...	157
Oct.	....	166	...	103	...	164
Nov.	....	173	...	144	...	163
Dec.	....	180	...	198	...	165
Avg.	....	176	...	187	...	160

Federal Reserve Board

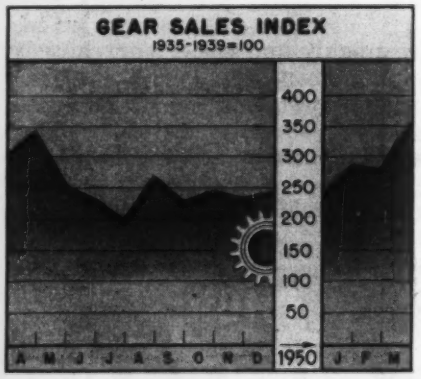


Fabricated Structural Steel

Thousands of Net Tons

	Shipments		Backlog	
	1950	1949	1950	1949
Jan.	134.7	152.7	565	675
Feb.	128.6	145.9	565	683
Mar.	152.8	185.9	556	582
Apr.	....	179.2	...	628
May	....	171.1	...	599
June	....	172.3	...	583
July	....	148.0	...	605
Aug.	....	183.9	...	583
Sept.	....	162.1	...	562
Oct.	....	99.8	...	584
Nov.	....	117.2	...	527
Dec.	....	135.5	...	555
Total	....	1,853.5	...	...

American Institute of Steel Construction



Gear Sales Index

1935—1939=100

	1950	1949	1948
January	280.2	320.7	346.8
February	272.9	282.3	324.4
March	358.4	299.1	389.8
April	....	339.0	320.9
May	....	250.1	283.6
June	....	227.8	324.1
July	....	193.1	384.4
August	....	262.0	335.6
September	....	224.9	320.4
October	....	242.3	333.3
November	....	230.7	309.0
December	....	242.8	325.9

American Gear Mfrs. Assoc.

Issue Dates of Other FACTS and FIGURES Published by STEEL:

Constr. Valuation ..Apr.17	Ironers, Standard ..Apr.17	Refrigerators May1
Employ., Steel Apr.17	Machine Tools Apr.24	Steel Castings Apr.24
Durable Goods Apr.24	Malleable Cast. May1	Steel Shipments ...Apr.24
Employ., Metalwkg Apr.24	Price Indexes May1	Trucks, Elec. Ind...Jan.2
Foundry Equip. ...Apr.17	Pumps, Orders May1	Vacuum Cleaners...May1
Freight Cars Apr.17	Radio, Television ..Mar.27	Wages, Metalwkg...Mar.20
Furnaces, Indus. ..Apr.17	Ranges, Elec. May1	Washers Apr.10
Gray Iron Cast. ...Apr.24	Ranges, Gas Jan.2	

FRB Index Still Climbing

Although the Federal Reserve Board's industrial production index for March was at the highest level since February, 1949, April's index should be slightly higher. The index was 186 per cent of the 1935—1939 average in March, 25 points above the low point in the 1949 recession and only 9 points below the postwar high reached in late 1948. It was 5 points higher than February's figure and 2 points higher than in March, 1949.

FRB's figures show the upswing in industrial activity still does not eliminate all the soft spots. There was smaller production in March than in February in a number of industries. These were: Cement, textiles, flour, fuel oil, rayon and crude petroleum. April's trends were also diverse. Activity in durable goods industries was expanded still further but declines are indicated in some nondurable lines and minerals.

Structural Activity Up

Fabricated structural steel activity is undergoing a seasonal improvement. Much of the activity so far this year has been in public works but there are a number of private jobs coming up to swell fabricators' volume. An increase in volume of work may eliminate some price cutting and enable fabricators to bid so they can make a profit.

American Institute of Steel Construction reports that March shipments rose to 152,812 tons from 128,623 tons in February. Bookings in March were 187,949 tons, the highest volume reported since March, 1948, when 213,123 tons were booked. The latest month shows an increase of 26 per cent over the same month a year ago and 64 per cent over February. For the first three months the bookings total 421,113 tons, compared with 388,261 tons for the same period in 1949.

The Business Trend

Good business appears to be assured for several months so a number of companies are reviving expansion plans. These programs should help keep output high

LITTLE doubt is held by economists that business is good and will stay on a high plane through the third quarter. Beyond that period few are willing to prophesy. Some predictions are being made that the year as a whole is going to be a good one but on the strength of three quarters of operations at the present level, a not too serious fourth quarter decline would still add up to a good year.

The overall optimistic air in itself may bring more business. Some companies are taking expansion plans out of the files and getting ready to put them into action. Several such projects were pigeon-holed a year ago when the industrial activity was heading downhill.

Industrial Production . . .

Activity in metalworking lines is nearly double that for the base period 1936-1939. In the week ended Apr. 29 STEEL's industrial production index matched the revised rate for a week earlier. The index for the last two weeks is 197 (preliminary) and is an alltime high. Gains in the steelmaking rate and in electrical energy distributed counterbalanced a decline in automotive assemblies in the latest week reported.

Steelmaking . . .

Steel companies are pouring steel at a record rate and expect to maintain the present pace into the third quarter at least. Last week the steelmaking rate was slightly higher than practical capacity for the second consecutive week. In the week ended Apr. 29 it was 100.5 per cent of capacity. Just a year ago the steel rate was declining from the rapid pace maintained in the first quarter.

Automobiles . . .

The gap between this year's assemblies and those in the like 1949 period is widening even without Chrysler. At the end of last week the passenger car assembly total in U. S. plants neared the 2 million mark and truck assemblies added another 425,000 units. In April U. S. and Canadian plants built an estimated 463,685 cars and 109,174 trucks. New overtime operations are announced by several auto makers and should add further to weekly outturn.

Construction . . .

Total value of new construction put in place during April is estimated at $1.7 billion by the Bureau of Labor Statistics. It represents a 10 per cent seasonal increase over March and is 24 per cent higher than in April, 1949. During the first four months of this year new construction totals $6.1 billion, 20 per cent more than in the corresponding period a year ago. Total outlays for all types of new private construction were estimated at $1254 million in April, up 9 per cent over March and 27 per cent over April, 1949. Public construction expenditures reached $443 million in April. They were up 15 per cent over a month earlier and 16

BAROMETERS of BUSINESS

		LATEST PERIOD*	PRIOR WEEK	MONTH AGO	YEAR AGO
INDUSTRY	Steel Ingot Output (per cent of capacity)†	100.5	100.0	97.0	98.0
	Electric Power Distributed (million kilowatt hours)	5,902	5,846	5,912	5,304
	Bituminous Coal Production (daily av.—1000 tons)	1,858	1,888	2,062	1,919
	Petroleum Production (daily av.—1000 bbl)	5,015	5,026	4,873	4,979
	Construction Volume (ENR—Unit $1,000,000)	$219.1	$185.7	$258.9	$145.9
	Automobile and Truck Output (Ward's—number units)	146,554	151,613	139,821	136,728
	*Dates on request. †1950 weekly capacity is 1,906,267 net tons. 1949 weekly capacity was 1,843,516 net tons.				
TRADE	Freight Car Loadings (Unit—1000 cars)	720†	723	720	785
	Business Failures (Dun & Bradstreet, number)	186	188	198	204
	Money in Circulation (in millions of dollars)‡	$26,962	$26,992	$26,969	$27,356
	Department Store Sales (changes from like wk. a yr. ago)‡	+5%	−19%	+1%	−10%
	†Preliminary. ‡Federal Reserve Board.				
FINANCE	Bank Clearings (Dun & Bradstreet—millions)	$13,443	$15,094	$13,265	$12,685
	Federal Gross Debt (billions)	$255.6	$255.6	$255.7	$251.4
	Bond Volume, NYSE (millions)	$19.4	$18.7	$21.5	$15.1
	Stocks Sales, NYSE (thousands of shares)	11,433	15,331	10,746	4,332
	Loans and Investments (billions)†	$66.7	$66.6	$67.0	$61.3
	United States Gov't. Obligations Held (millions)†	$36,170	$35,941	$36,702	$32,765
	†Member banks, Federal Reserve System.				
PRICES	STEEL's Weighted Finished Steel Price Index††	156.13	156.13	156.13	154.01
	STEEL's Nonferrous Metal Composite‡	163.6	162.3	157.4	193.2
	All Commodities†	153.7	152.2	152.1	155.6
	Metals and Metal Products†	170.3	170.0	169.6	170.1
	†Bureau of Labor Statistics Index, 1926=100. ‡1936-1939=100. ††1935-1939=100.				

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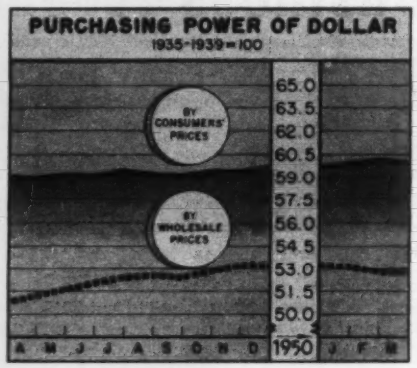
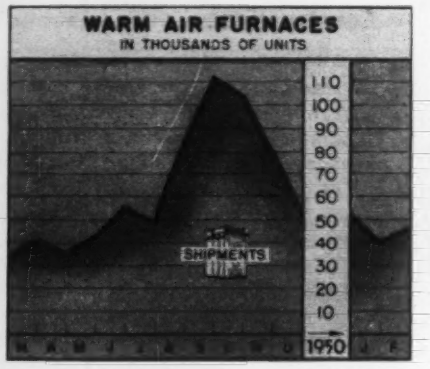


Purchasing Power of the Dollar

As Measured By:

	Wholesale Prices		Consumers' Prices	
	1950	1949	1950	1949
Jan.	53.1	50.1	59.9	58.5
Feb.	52.7	50.9	60.1	59.2
Mar.	52.8	50.8	59.9	59.0
Apr.	...	51.2	...	58.9
May	...	51.6	...	59.1
June	...	52.0	...	59.0
July	...	52.4	...	59.3
Aug.	...	52.6	...	59.2
Sept.	...	52.4	...	59.0
Oct.	...	52.8	...	59.3
Nov.	...	53.2	...	59.3
Dec.	...	53.2	...	59.7

U. S. Office of Business Economics



Warm Air Furnaces

Shipments in Units

	1950	1949	1948
Jan.	39,887	31,855	46,558
Feb.	45,618	33,125	36,345
Mar.	.....	41,376	39,297
Apr.	.....	34,595	45,597
May	.....	42,427	55,473
June	.....	55,857	64,724
July	.....	48,551	57,292
Aug.	.....	84,250	92,011
Sept.	.....	111,582	103,566
Oct.	.....	102,989	107,024
Nov.	.....	78,828	77,498
Dec.	.....	51,766	51,163

Bureau of the Census

Charts—Copyright 1950, STEEL

per cent over the like 1949 month. New home construction accounted for $720 million of private construction's total. Total new home construction in 1950 is running 50 per cent ahead of 1949.

Bituminous Coal . . .

The slide in bituminous coal production is still unchecked. Week to week declines are small but steady. In the week ended Apr. 22 about 11.2 million tons of bituminous coal were mined. Production to the above reporting date this year was 130.1 million tons. In the corresponding period in 1949 output was 164.6 million tons.

Business . . .

New business charters also reacted favorably to the good economic climate in March. The total for the month reported by Dun & Bradstreet Inc. rose to 9180 from 7736 in February. Numerically it was the largest total for any month since April, 1948. Stock company organizations in the first quarter of this year are almost 19 per cent higher than in the corresponding 1949 period. This year's three-month total is 25,986, last year it was 21,905.

Oliver Cuts Work Force

Return of seasonal patterns to farm implement buying is given as the reason for gradually reducing employment at Oliver Corp.'s tractor plant in Charles City, Iowa. First layoffs were made in the gear department. Other cuts will be made through May and June, reducing the work force one-third.

Climax Stock Soars

Skyrocketing of the common stock of Climax Molybdenum Co. in recent weeks, from around $12 to better than $19 per share, has been the subject of much conversation and speculation both in financial and metalworking circles. A recent issue of STEEL carried announcement of new developments the company's research organization has under way for the production of pure molybdenum metal in ingot form. However, this disclosure has nothing to do with the electrifying rise in Climax stock. The explanation is that word has been passed around to the effect the company has made discoveries of uranium in some of its ore holdings. All you have to do anywhere these days to start a financial furore is to mention uranium.

New High in Orders

March volume reached $20.6 billion with metalworking industries setting the pace

METALWORKING companies will be kept busy for the next few months on the basis of new orders placed in March. New orders reported by the Commerce Department are a good indicator of short-term future activity and March's volume was the best postwar.

Even though part of the jump in new order volume, from $18 billion in February to $20.6 billion in March, reflects seasonal improvement, the increase is substantial after allowances for this fact are made. Durable goods registered the sharpest increase in new orders, going from $7.5 billion to $9.5 billion. New business in durables continued to surpass sales, causing bigger backlogs in all hard goods industries except stone, clay and glass. The rise in backlogs for all durables was $1.1 billion.

Highest in More Than Year—Manufacturers' sales reached the highest level in 15 months in March. After seasonal adjustment, March sales were up 6 per cent over February and 3 per cent over a year ago. Durable goods again showed the biggest gain although soft goods sales exceeded both the month ago and year ago totals.

Despite the high level of industrial activity, goods are being sold as produced and not backing up on manufacturers. Inventories at the end of March were practically unchanged from a month earlier, Commerce totals show. After seasonal adjustment durable inventories edged up to $14 billion from $13.9 billion a month earlier and nondurable inventories dropped to $17.1 billion from $17.2 billion.

Aluminum Demand Up in West

Heavy demand for aluminum products has raised operations at Kaiser Aluminum & Chemical Corp.'s West Coast facilities to 95 per cent of capacity. In April a year ago the rate was 70 per cent and it declined to 50 per cent at the low point last summer. Although a seasonal dip is expected this summer, Donald A. Rhoades, vice president and general manager, says orders on the books indicate operations will not drop below 80 per cent.

One of Kaiser's newest plants, the aluminum foil mill at Permanente, Calif., is now at 80 per cent of capacity. Its rated annual capacity is 500,000 pounds of foil. Ten months ago the

plant was operating at 20 per cent of capacity. Production of cigaret package foil is being increased at the plant with addition of new machinery, and demand from television and radio industries is reported to be heavier.

Operations Will Stay Up

Shipbuilding and repairing industry exception to healthy picture, says Bethlehem chairman

HIGH operations through the third quarter are forecast by board chairmen of the nation's two biggest steel companies but both find other events to take the edge off any feeling of complacency.

Irving S. Olds, U. S. Steel's chairman, says strike losses and not insufficient capacity are responsible for continuing steel shortages. Twenty-nine million tons of steel have been lost through strikes since the war's end.

Fair Share — Although the statement has been made that U. S. Steel has paid too small a part of its profits as dividends, Mr. Olds explains that nearly two-thirds of corporation profits which totaled $982.3 million in the ten-year period 1940-1949 have been paid in dividends. "Few industrial corporations have paid out in dividends a larger share of their earnings," he says.

Bethlehem Steel Corp.'s board chairman, Eugene G. Grace, believes all industry—not only steel or big companies—should be concerned over the various governmental investigations. "It is a step in the promotion of a socialized state and a nationalized industry. The whole issue is bigger than steel alone."

Shipping Allowed To Disintegrate —He deplores the government's inaction in allowing the nation's maritime shipping to disintegrate. While more ship tonnage is being built throughout the world than at any time since the war most U. S. ships are laid up, he says.

High cost of constructing and operating American ships is the basic cause, he explains. The shipbuilding outlook is "sad" and he sees nothing in prospect "in the way of a decent order" for ships this year. The same condition exists in ship repair. Last year Bethlehem's ship repair business fell to a $16 million quarterly average and in the first quarter 1950 it was only half that sum.

Steel demand is active from consumer durable goods industries, Mr. Grace reports, and heavy industry demand is picking up. Export demand is the poorest in years and while exports are dropping imports are increasing.

Regulators Ride High

Heavy home building volume and increasing availability of natural gas are two factors that assure a good year for Minneapolis-Honeywell Regulator Co., says H. W. Sweatt, president.

The heating and control industry is bound to have a good year, he declares, and the earliest possible recession won't come before the fourth quarter.

He estimates Minneapolis-Honeywell's sales and earnings in the second quarter will compare favorably with the first three months. In that period the company's net profit was $2.4 million on sales totaling $19.5 million.

Mr. Sweatt terms the expansion in natural gas for domestic heating a "big advantage to our business" that should produce a substantial future volume.

Facilities Being Doubled

Sentinel Radio Corp., Evanston, Ill., is starting on an addition to double its manufacturing facilities. The company makes portable and table model radio sets and television receivers. In the 12 months ended Mar. 31 the company sold 62,000 television sets and about 400,000 radios.

Since last September Sentinel has been unable to satisfy more than a moderate percentage of demand for its products, says President Ernest Alshuler. March was the best month in the company's peacetime history.

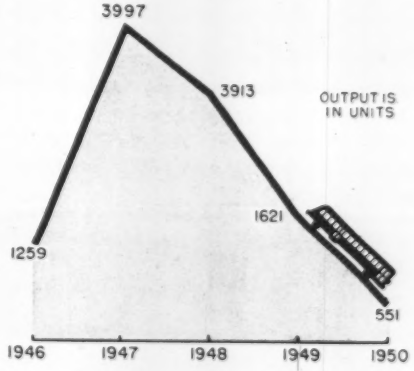
Bus Sales Volume Shrinks in Midst of Boom

IT'S bad enough to be sick at anytime but it's even worse to be that way when surrounded by husky, thriving relatives. This is the situation in which the bus building industry finds itself. While passenger car sales are booming and there is no cause for complaint with the way truck sales are going, bus sales are pretty sick.

First quarter sales this year are only one-third as large as in the like period in 1949. Sales in 1949 were down about the same amount from the preceding year. To make matters worse there is little prospect for improvement. Although the prospective customers need the equipment badly, they lack the funds to buy.

First Quarter Sales

. . . show busses headed downhill



No Profit—Stated simply, there is no money in operating transit companies. Labor costs and taxes take such a big bite out of each fare that there is little left for buying new equipment. Privately owned transit companies are vanishing like the buffalo herds. Municipally operated companies aren't making any money and are forced to boost fares in order to keep themselves from going too far into the red.

Each rate boost reduces the number of passengers and so the financial situation improves little, if at all.

Export business is eagerly sought by the bus builders but there is too little there to take up the slack.

Leases Busses—ACF-Brill Motors Co. is now using a leasing arrangement to close deals with capital-short customers. Under the arrangement only a small down payment need be made on busses. Remainder is financed by the company over an eight to ten year period. Other bus builders will be watching ACF-Brill's experiment to see how much business results.

It will not have to be an overwhelming successs to cause others, to follow. A starving man doesn't insist on getting steak, rare.

Cuban Order to ACF-Brill

ACF-Brill Motors Co., Philadelphia, received an order for 100 city transit busses for Havana, Cuba. Dollar value of the order was not disclosed. Deliveries on the order will start this month.

Mack Gets Bus Order

An order for 140 diesel busses was placed with Mack Trucks Inc., New York, by International Railway Co. of Buffalo. The transit company bought 160 similar units from Mack last year and the order has already been delivered. Trustees of International Railway approved the purchase.

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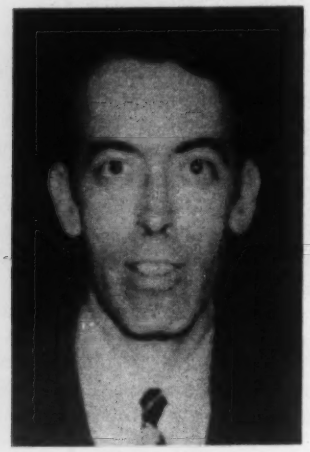
Men of Industry



FRED H. PILLSBURY
. . . president, Century Electric

Fred H. Pillsbury succeeds his father, **Edwin S. Pillsbury,** as president of **Century Electric Co.,** St. Louis. The elder Mr. Pillsbury, one of the founders of the firm, and president since 1914, will continue as chairman of the board of directors, with his son taking over active management. Fred Pillsbury became vice president in charge of operations last July and a member of the board in 1942.

H. M. Rich Jr. was appointed division vice president, Electro Metallurgical Division, **Union Carbide & Carbon Corp.,** New York. He will have headquarters in Pittsburgh. **W. H. Ferguson** was promoted to eastern manager, responsible for sale of Electromet products in the eastern seaboard and Birmingham areas. **Robert W. Crozier** was appointed a sales representative in Pittsburgh.

Kewanee Boiler Corp., Kewanee, Ill., elected **E. M. Palmer** vice president.

Charles E. Ducommun, vice president and treasurer, **Ducommun Metals & Supply Co.,** Los Angeles, was elected president. He succeeds **Edmond F. Ducommun,** named board chairman.

Henry A. Raymond, long associated with **Cleveland-Cliffs Iron Co.,** Cleveland, has retired as ore sales manager and is succeeded by **W. McK. Green. John S. Wilbur** was appointed assistant manager. Mr. Raymond will serve as ore sales consultant.

F. S. Jones was named vice president-sales for **Colorado Fuel & Iron Corp.,** Pueblo, Colo., succeeding **Newell H. Orr,** retired.

J. RUFUS LARSON
. . . Latrobe V. P. and director

Joseph Workman, vice president in charge of sales, and **J. Rufus Larson,** long associated with the production department, **Latrobe Electric Steel Co.,** Latrobe, Pa., were elected to the board of directors. Mr. Larson also was elected vice president in charge of production. Previously works manager of the plant, he also handled the company's labor relations.

Walter J. Campbell is the new managing editor of STEEL. News editor of the magazine since August, 1949, Mr. Campbell is elevated to the newly created position to co-ordinate news, market and engineering-production editorial services of the publication. He will continue to act as news editor. Mr. Campbell is a graduate of Ohio Wesleyan University and has been associated with STEEL since 1937. Before that he served nine years as reporter and editor on Ohio newspapers.

WALTER J. CAMPBELL
. . . managing editor, STEEL

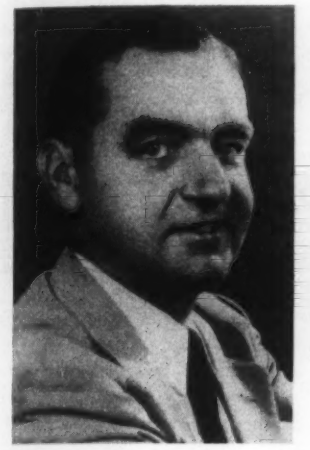
LEWIS M. PARSONS
. . . U. S. Steel vice president

Lewis M. Parsons, formerly assistant to vice president-sales, was elected a vice president, director and member of the executive committee of **United States Steel Corp. of Delaware.** He will continue to be located at Washington.

Five new vice presidents elected by **Harbison-Walker Refractories Co.,** Pittsburgh, are: **F. H. Atwood, G. F. Cronmiller Jr., W. F. Rochow, H. L. Smalley,** and **E. T. Hile. W. F. Godejohn,** formerly vice president in charge of operations, was made senior vice president of the company. Mr. Atwood will be in charge of industrial relations, Mr. Cronmiller will continue duties as secretary, Mr. Rochow will be in charge of technical sales and research, Mr. Smalley in charge of sales, and Mr. Hile in charge of manufacturing. **J. E. MacCloskey,** chairman of the board of Harbison-Walker, declined re-election, but will continue as a director and general counsel for the company. **G. G. Coolidge,** vice president and director, has relinquished his post as vice president, but continues as a director and will serve in an executive and advisory capacity.

William J. Monahan, secretary and treasurer, **Scullin Steel Co.,** St. Louis, is now vice president and secretary. **Edwin L. Kaiser,** assistant secretary and assistant treasurer, is treasurer and assistant secretary; and **Fred H. Spenner,** assistant vice president, mechanical engineering, is vice president of the same division.

Alan Wood Steel Co., Conshohocken, Pa., appointed **W. E. Bossert** New York district sales manager succeed-



A. O. SCHAEFER
. . . new V. P. at Midvale

C. PORTER PACKARD
. . . Crocker-Wheeler sales manager

K. A. VAUGHAN
. . . sales engineering mgr., Gould Battery

tinue its operation under that name. **A. R. Wise** was appointed a vice president of Cleveland Tapping and will be in charge of sales.

A. O. Schaefer was elected vice president in charge of engineering and manufacturing, **Midvale Co.**, Nicetown, Philadelphia. He joined the company in 1922 and served successively as research associate, assistant production manager, engineer of tests and executive metallurgical engineer.

J. G. Pacan was appointed district sales manager, **Round Chain & Mfg. Co.**, Chicago. He will be in charge of sales in Wisconsin, Minnesota, Iowa, Nebraska and North and South Dakota.

James C. Zeder was named director of engineering and research, **Chrysler Corp.**, Detroit.

C. Porter Packard was appointed sales manager, **Crocker-Wheeler Division**, Ampere, N. J., Elliott Co.

O. DeG. Vanderbilt III was elected president, **Taylor-Wharton Iron & Steel Co.**, High Bridge, N. J. **O. DeG. Vanderbilt Jr.** continues as chairman of the board and chief executive officer. **G. R. Hanks** was elected chairman of the executive committee.

J. M. Floyd, vice president-manufacturing, **A. O. Smith Corp.**, Milwaukee, was named executive vice president of the company.

Richard H. Olson, vice president-sales, **Electric Machinery Mfg. Co.**, Minneapolis, was elected president, succeeding **Walther H. Feldmann**, resigned to assume office of vice president-sales, Worthington Pump & Machinery Corp., parent company.

Gould Storage Battery Corp., Trenton, N. J., has advanced **K. A. Vaughan**, manager, field engineering, to the newly created position of manager, sales engineering. His duties will include not only supervision of field engineers and service stations, but also co-ordination of all matters pertaining to quotations, inquiries, and negotiations at Gould's sales headquarters.

Bridgeport Brass Co., Bridgeport, Conn., elected **Otis A. Glazebrook Jr.** chairman of the executive committee, **Everett Japp** and **Francis J. Kearns** vice presidents, **Warren J. Faust** controller, and **Joseph P. McNamara** assistant secretary.

C. Allan Fee was elected secretary, **American Car & Foundry Co.**, New York, succeeding **Howard C. Wick**, retired after 45 years of service, the last 34 as secretary.

OBITUARIES . . .

Trusten P. Draper, 69, former vice president and general manager, **Worcester Pressed Steel Co.**, Worcester, Mass., died Apr. 29 in Wilmington, Del. He retired in February. He had previous association with Youngstown Sheet & Tube Co. and Wheeling Steel Corp.

John G. Carruthers, 70, manager, tin plate division, **Republic Steel Corp.**, Cleveland, died Apr. 29. A veteran of 50 years in the steel business, he joined Otis Steel Co. as sales vice president about 30 years ago.

Arthur S. Knoizen, 52, executive vice president and director, **Joy Mfg. Co.**, Pittsburgh, died Apr. 29.

Robert C. Bennett Sr., 51, president, **I. A. Bennett & Co.**, Chicago, died May 1. The Bennett firm for many years represented National Electric Products Corp. in the midwestern states, and on May 1, date of Mr. Bennett's death, merged with that company.

Leslie P. Mahony, 72, former director of sales, explosives department, **E. I. du Pont de Nemours & Co. Inc.**, died Apr. 19 in Wilmington, Del.

Wynn F. Rossiter, assistant to the vice president, **Carpenter Steel Co.**, Reading, Pa., died Apr. 24. He was district sales manager of New England for many years.

L. D. Holland, 46, assistant to the president, and a director of **E. F. Houghton & Co.**, Philadelphia, died Apr. 14.

Julius A. Franklin, 72, sales manager, **Central Die Casting & Mfg. Co. Inc.**, Chicago, died Apr. 24.

Johnson Heywood, 65, author of technical books including *Grinding Wheels and Their Uses*, died Apr. 7 at his home in Stamford, Conn.

John G. Farrar, 60, who resigned in 1946 as comptroller, **General Electric Co.**, Schenectady, N. Y., died in Charlottesville, Va., Apr. 26.

Irving H. Reynolds, manager of the engine department at **Allis-Chalmers Mfg. Co.**, Milwaukee, for 23 years, and who retired in 1935, died Apr. 19.

William F. Bornfleth, 61, foundry manager, **Cutler-Hammer Inc.**, Milwaukee, died Apr. 21 after an illness of several months.

Hiram C. Nicholas, who was president, **Quality Castings Co.**, Orrville, O., died Apr. 25.

Albert J. Lent, 51, general superintendent, **United States Graphite Co.**, Saginaw, Mich., died Apr. 5.

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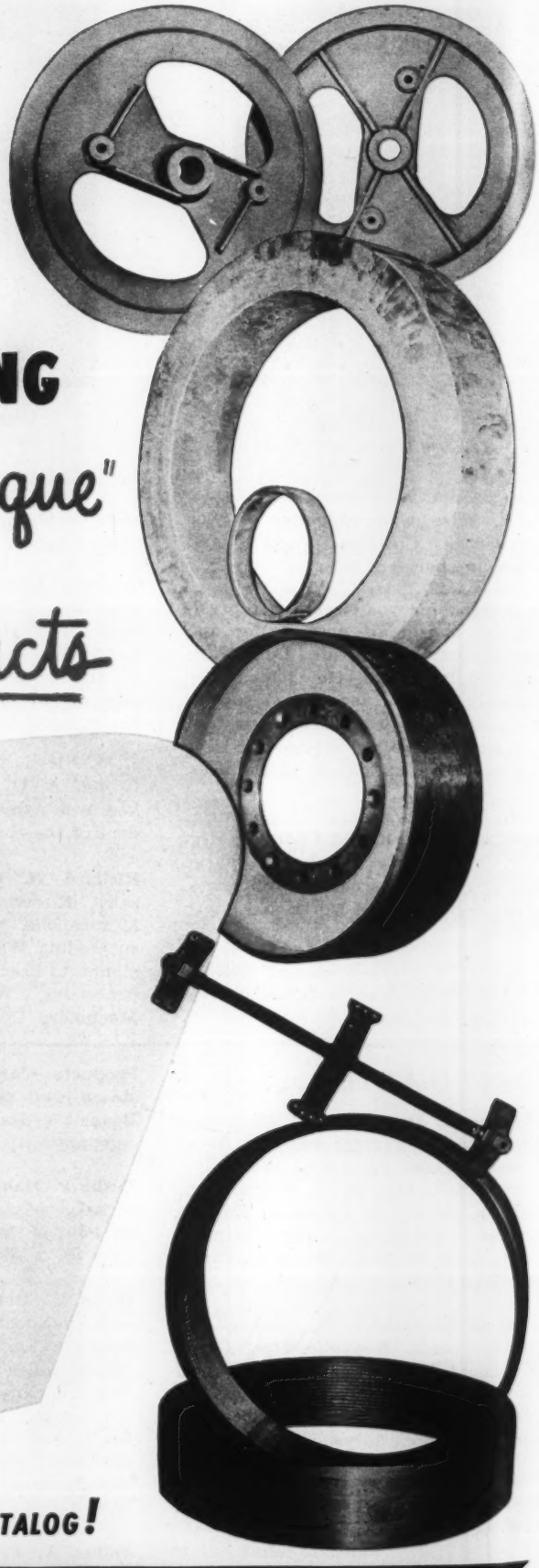

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Production AND Engineering
NEWS AT A GLANCE

ADJUSTABLE INFRA-RED OVEN—Out in Cleveland Pneumatic's plant in Cleveland, what may be termed as an "all-around" paint drying oven is cutting drying time by a good 80 per cent. The oven—an infra-red job—which in two minutes can be adapted to handle any size work, is employed to process aircraft shock struts in many odd sizes. Drying efficiency is furthered by interlocking sections which allow the unit to be shaped to form a circle or rectangle. Work formerly requiring as long as 24 hours drying time to meet contract specifications now is handled in two hours.

HARD POINT TO GET OVER—Negligence in indexing or replacing the carbide insert in ejector type tools as soon as the cutting edge shows evidence of dullness is still one of the largest sources of trouble with carbide tools in general, *Grits and Grinds* reports. Many operators, it points out, apparently do not stop to consider that if a tool is continued in use after it dulls that power consumed increases, greater strain on the insert may cause it to chip, that a poorer finish on the work is inevitable, the tool is harder to recondition and carbide is needlessly wasted because the end of the insert must be ground down to the undamaged portion.

OIL MIST PRINCIPLE— Oil mist system of lubrication may be likened to the flow of electric energy, E. Ralph Harris, manager, industrial sales, Alemite Division, Stewart-Warner Corp. pointed out to members of the American Society of Lubrication Engineers recently. Like electrical energy, the oil mist is pushed through lines to the points of usage. The machine bearing picks up only amount of oil mist it requires for lubrication—just as the electric motor only uses the electric energy it requires. Thus bearings always receive adequate lubrication. They also are kept free of contamination because the oil mist pressure in the bearing area is greater than the outside atmospheric pressure.

TRANSVERSE FLUX INDUCTION HEATING— It soon may be possible to heat treat nonferrous strip by means of a special method of radio-frequency induction heating. The method, reported before the North Eastern District meeting of the American Institute of Electrical Engineers, Providence, R. I., by Robert M. Baker of Westinghouse Electric Corp., Baltimore, is referred to as "transverse flux induction heating", and accomplishes the work by passing strip between two opposing laminated pole structures. In one instance the method successfully heat treated aluminum strip 0.040-inch thick and 54 inches wide. It, however, is still in pilot line stages.

"TOOLS" FOR THE DESIGNER—To the designer any information useful to him in designing a part is a "tool". In seeking avenues to cut costs, Glenn L. Martin Co., Baltimore, found that designing is a form of manufacturing, and costs can be cut by stepping up efficiency. Practice followed by the company, according to John VanHamersveld, supervisor of design cost control, consists of supplying among other "tools" bulletins which give the designer information on material costs, standard parts available and economic design information—all in quick reference form. The information gives the designer sources of quick comparison on what the same basic part would cost designed for production by any one of several ways. Cost data include labor and assembly, and allowances for reworking, supervisory and tooling costs, testing, etc.

DOLLAR SAVER—After losing nearly $60 every time a stainless steel cabinet top was scratched in its plant, United Refrigerator Co., Hudson, Wis., decided to do something about it. What it did not only was instrumental in slashing costs some $100 per day, but hiked production some 14 per cent. Elimination of costly scratches came about by employing a strippable plastic coating to protect stainless steel surfaces throughout various stages of fabrication. Other economies were derived through smoother handling and longer forming die life. (p. 82)

"FACELIFTING" PAYS—Bad warehousing can tax physical efforts of employees, delay shipments and generally play havoc with profits. To cut down shipping-cost leaks, Johnson & Johnson, New Brunswick, N. J., gave its shipping center a good overhauling. As a result it is now shipping orders in four hours as against five days. Furthermore, it cut supervision problems by 90 per cent and reduced physical efforts of its employees by one half. (p. 88)

SWITCH THAT SAVED—By switching to a new screw stock steel, production of studs for voting machines jumped up an average of 33 per cent in the plant of Automatic Voting Machine Co. The new material also was responsible for lengthening tool life on stud-making machines by some 25 per cent. (p. 89)

THE LOOPING MILL—Although the looping mill was a natural improvement over the tandem cross-country mill to increase production of merchant shapes, it did present the roll designer with another problem. He not only had to figure the shapes of passes and method of reduction but also roll diameters in order to keep the loop from building up to a length that caused loss of heat. Excessive looping is prevented by keeping volume of steel passing through the various sets of rolls constant at all times. Today, the majority of mills have four to six or more continuous roughing stands, the bar being looped through various strand, planishing and finishing stands. (p. 94)

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STAINLESS STEEL

Fabricating Costs Cut $100 Per Day

By ARTHUR P. SCHULZE

By using strippable plastic coatings, one manufacturer of commercial refrigeration cabinets expedites assembly and improves protection of stainless steel sheets during fabrication, hiking production 14 per cent

Fig. 1—One operator applies strippable coating to a 30 square-surface-foot sheet of stainless steel in less than 2 minutes. All photos courtesy Minnesota Mining & Mfg. Co.

EXPERIENCE of United Refrigerator Co., Hudson, Wis., may be cited as one typical illustration that clearly demonstrates the possibilities which strippable coatings present as a newly discovered, eminently promising source for reducing production and shipping costs. Here, adoption and standardization of a thin plastic coating to protect stainless steel throughout various stages of fabrication has hiked production some 14 per cent, and at the same time, slashed costs on the average of $100 per day.

Officials of this commercial refrigeration equipment manufacturer attribute both improvements to "smoother" handling of stainless steel sheets which has resulted directly in eliminating virtually all waste motion in moving sheets in process along the assembly line. The newly established efficiencies and economies are credited to the plastic coating, which is now extensively utilized to safeguard the sheeting against scratches, abrasion, marring, etc., during the manufacture of freezing and cooling units.

First tried and tested by United in April, 1949, the coating—"3M" brand strippable coating, made by Minnesota Mining & Mfg. Co., St. Paul, Minn.—is designed expressly to protect finished metal surfaces against abrasion, die marks and scratching during handling and shipping.

How has this recent development solved United Refrigerator's particular product protection problem? R. E. Sundblad, plant manager, explained it this way:

"Every time a stainless steel cabinet-top was scratched, we lost nearly $60. Quality requirements prevented reclaiming the scratched top."

Losses Too Common—Such losses, Sundblad further pointed out, were entirely too common before the strippable coating was tried. At that time, the company protected buffed and polished stainless steel surfaces with thin sheets of Kraft paper loosely sandwiched between individual sheets of stainless. For storage, this paper proved its value; but during production-line handling, that was something else again.

As a matter of plain fact, the paper became a hindrance, its principal disadvantage proving to be the "double handling" entailed. At every step in making a stainless steel refrigeration cabinet, workers on the assembly line had to remove the paper cover from sheet surfaces, do the required fabrication work, then replace the paper on the piece. During all this, the paper often tore, wrinkled, or blew away—thereby decreasing its protective value.

A second major disadvantage lay in the fact that once the stainless steel pieces were ready for final assembly, the paper protective covers could no longer be used. In other words, between assembly and crating, the finished surface of a completed cabinet was left unprotected. This lack of preshipping protection was corrected when the company switched to the plastic coating material.

Coating Sprayed—About 100 square-surface-feet of each stainless steel cabinet are treated with the strip-coating compound. Using a standard paint-spray gun, an operator applies the material on individual 30-sq ft sheets of No. 4 stainless steel to 2-mil thickness before assembly-line work begins. The spray-coating operation takes less than 2 minutes on a single sheet, with approximately four such sheets required for supplying the material from which a single refrigeration unit is fabricated.

Throughout a daily production schedule that calls for a minimum of 40 stainless steel cabinets, more than 140 such sheets are protectively coated at a cost of 75 cents per sheet. This figure covers the cost of the peelable plastic material itself, the labor of applying it, and the handling of sheets between fabrication jobs.

The 75-cent figure contrasts sharply from the economy standpoint with the former cost—$1.50 per

Fig. 2—More than 80 workers handle the finished metal before the cabinet is ready for crating. Surface finish is protected from scratching and abrasion by strippable coating. Here, operators are mechanically notching and punching cabinet parts

Fig. 3—Buffing is a vital step in producing the cabinets. All corner welds are buffed until a finish of gleaming luster is achieved. During buffing, as in many other essential fabricating operations, strippable coating safeguards the finish against scratching or abrasion. Dark lines surrounding the buffed area are the edge of the 2-mil thickness of the plastic coating compound

steel sheet under the previously practiced paper system—despite the fact that the paper was supplied with the steel by the rolling mill at no extra cost and that there was no labor in applying it, since it was already in place.

Where, then, did this $1.50 cost accrue?

According to United Refrigerator's plant manager, it accrued in the excessive handling of sheeting between each fabrication job. Removing the Kraft paper prior to sheet fabrication, picking it up and replacing it on each piece after each step in the fabricating routine, holding the paper in place while transporting the work to the next operation. All these contributed to excessive handling and high cost.

High Savings—Net savings made possible by the new sheet-protecting method and material are 75 cents per sheet. This amounts to a total of $105 per day. Or, figuring on the basis of one year's production of stainless steel refrigeration cabinets at the rate of 40 a day, it spells a potential economy of $27,300 annually.

In fabricating a single unit, nearly 80 workers handle the plastic-coated stainless parts and subassemblies before the finished product evolves. Then the protective film is simply whisked off in a jiffy with an appropriate solvent, and the cabinet is ready to be crated for shipment.

More than 10 different fabricating steps are required to complete the manufacture of a single refrigeration cabinet between the time it is protectively spray-coated and crated. These operations, among others, include shearing, notching, punching, forming, welding, weld-grinding and buffing, assembly, refrigeration and removal of protective coating.

On the average, 22 gallons of the strippable coating compound are used for the protective-coating of 140 stainless steel sheets needed for daily production. Finish of sheeting is completely protected against normal rough handling throughout fabrication by the coating. Coating is not removed until the assembled cabinet is ready for crating and shipment.

In addition to showing the direct dollar economies and time savings, United Refrigerator's production experience with strippable coating also points to the material's nominal cost, which more than offsets expensive refinishing of pieces in process due to mars or scratches.

Absorbs Shock—A red-bronze (translucent) film with a synthetic resin base, the compound has the

Fig. 4—Completed refrigeration cabinets after protective coating is removed

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ability to absorb shock and resist abrasion. Also, it shows excellent resistance to water, gasoline and oil. The film formed—removed simply by solvent-wiping, peeling, or air blasting—provides full protection to surfaces covered because its cohesive strength (ability to withstand self-rupture) is greater than its adhesive strength (ability to cling to a surface). Yet the adhesive strength of the composition is adjusted so that the film will remain on blank metal stock during deep drawing or similar production operations.

When thoroughly dry and at ordinary temperatures, the film is nonblocking to itself or to bare metal for as long as six months. Its nonblocking qualities may be further improved by dusting the film with finely ground mica, graphite or soapstone, as is done with most rubber goods. This particular practice is generally recommended for products, parts or sheets which are to be held in long-term storage, or in those instances where the film is compressed under considerable weight.

Application Steps—Application procedure usually followed consists of five basic steps:

1.—Surfaces must be clean—free of all oil and grease—and dry. Either alkaline cleaning or solvent degreasing (preferably the latter) may be used for surface preparation when this is required.

2.—Spray application of a continuous film of ½ to 1-mil thickness. Spraying may be done with a Binks model 19 gun and No. 63-PB head or a DeVilbiss type MBC gun with No. 2 or No. 704 cap and No. FF tip. Pressures of 30-40 psi (10-15 psi on cup gun) on fluid and 60-70 psi for atomization generally produce good results.

3.—Allow film to level out for 1 to 2 minutes at room temperature.

4.—When not air-dried, the coating may be force-dried either (a) in a circulating hot air oven at 300° F for 2 minutes, or (b) under infrared lamps at 300° F for 2 minutes (250-w bulb at 6-8 inches).

5.—Cool to room temperature before handling or performing any further work on the pieces.

Forming from Polished Stock—In cupping, forming or drawing operations, the tough resilient film formed by coating compounds of this type performs two vital functions. First, it protects polished ferrous and nonferrous surfaces from die marks, scratches and abrasion—on sharp, reverse bends, on deep draws, and on short radius turns. Die lubricants need not be used excessively. Consequently, thanks to the coating's "cushioning" effect, service life of dies and rolls is prolonged accordingly.

Other growing uses of strippable plastic coatings include protection of ground, polished or plated parts against abrasion or tarnishing while other components of the same subassembly are machined; and coating of finely finished parts produced at some distance from point of use to protect them and expedite their transportation and handling. Major savings in "rejects" frequently can be made on this score alone.

FORM-CUTTING MACHINE

Increases Internal Gear Output

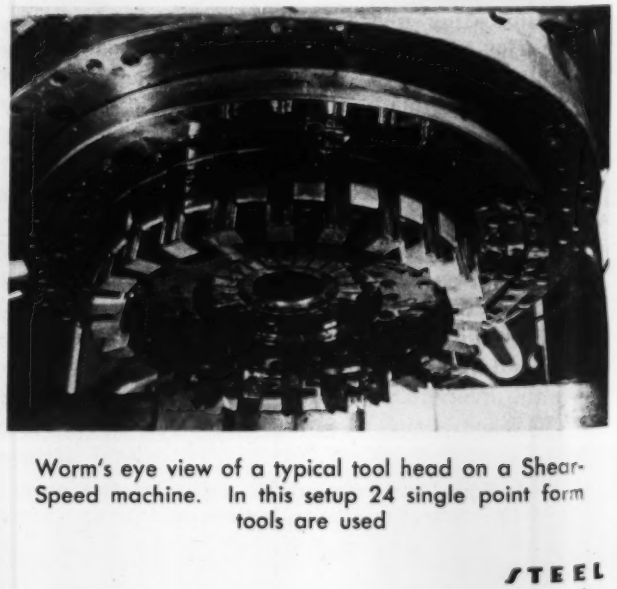
SHAPES of almost any irregularity may be cut by a new machine, providing the shape lends itself to form-cutting with radially fed tools. Minimum size or inside diameter which can be handled by the machine, made by Michigan Tool Co. of Detroit, is 5.4 inches. Maximum inside diameter which can be cut is about 20 inches.

In operation on such objects as internal gears and splines, the "internal gear" Shear-Speed machines reverse the tool-feed action used for cutting of external forms. Using two inverted cones, the tools are fed outward before each stroke of the reciprocating work and its holder. To prevent tool drag, they are retracted slightly before the return stroke.

Feed is decreased to finish-feed as proper depth of cut is approached. Two or three strokes at exact depth (without feed) are generally used to "clean up" before head retracts and machine stops for reloading.

5000 Without Regrinding—First of the internal gear machines put into service is reported to have cut 5000 gears of 12-inch pitch diameter without requiring a tool grind. Machine cycle time on this job is 24 seconds, with an hourly output of 85-90 parts.

Tools are reground by locking the individual form tools together on the magnetic chuck of a surface grinder and removing a few thousandths (0.010 to 0.015-inch) from the top face of the tools simultaneously. It is said that no other grinding is necessary.



Worm's eye view of a typical tool head on a Shear-Speed machine. In this setup 24 single point form tools are used

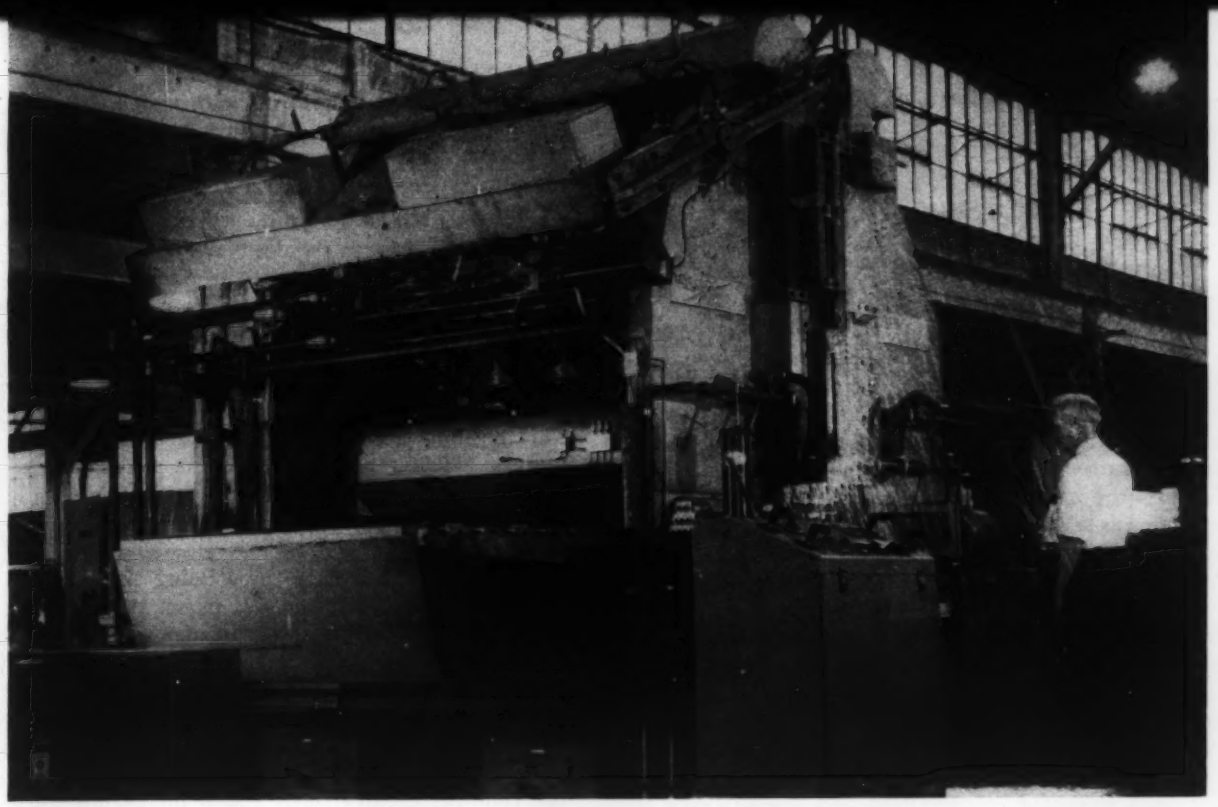


Fig. 1—This welder joins the ends of ¼-inch thick hot-rolled coils up to 62 inches wide in approximately 10 seconds

NEW FLASH BUTT-WELDER JOINS ¼-INCH STRIP IN 10 SECONDS

By DAN REEBEL
Associate Editor, STEEL

French steel plant gets machine with 62-inch capacity, hydraulic controls of advanced design and high speed flash trimmer

AUTOMATIC hydraulic-type welding control, main die units which may be changed quickly, and an improved gaging system are engineering highlights of a new 60-inch, 600 kva strip flash welder.

The unit, capable of flash welding the ends of 0.250-inch thick hot-rolled coils up to 62 inches in width, was designed and built by Taylor-Winfield Corp., Warren, O., for installation at the Forge Acieries Unisor steel mill located just outside Paris, France. It effects the weld in approximately 10 seconds. A flash trimmer, an auxiliary item of equipment produced by the Morton Mfg. Co., Muskegon Heights, Mich., utilizes 10 knives to remove simultaneously all flash metal from both the top and bottom of the finished weld.

The welding control is a distinct advance forward in the engineering of hydraulic welder controls. It is particularly adaptable to heavy butt flash welding of steel strip and affords full control of the welding operation to the operator at all times. The main welding slide follows precisely the movement of the operating lever in all its motions.

During production when the lever is moved forward, the valve opens and the welding cycle begins. A main upset slide moves forward at a predetermined rate as established by the welding cam and as required by the material being welded. An auxiliary switch is connected to the control and when the flashing period is finished, the welding current is cut off shortly after the beginning of the upsetting action.

Automatic Welding Cycle Utilized—Once the flashing action has begun, the welding cycle is entirely automatic, yet by movement of the control lever the operator may reverse the machine at any time. Flashing time may be adjusted through a range of from 4 to 40 seconds by operation of a control with a calibrated dial.

Amount of upset may also be quickly changed for different gages of material by adjusting a calibrated upset control. A calibrated adjustment on the flash-

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ing cam permits rapid setting for various stock thicknesses. The final die opening, which must be changed for various stock thicknesses, is operated by turning a spacing bar handle. Adjustments for die opening, amount of upset, welding speed, etc., are concentrated near the operating position so that a complete change of settings for one gage of strip to another may be accomplished in approximately 1½ minutes.

The two lower die holder assemblies each consist of a bronze holder, which carries both the copper-alloy current conducting dies and the steel "heeling" dies. Located between the copper-alloy and steel dies is an antifriction bearing equipped steel roller, which is raised when the welder is unclamped. This prevents the strip from dragging on the dies and thus eliminates both excessive die wear and scratching of the strip. The two upper die holder assemblies are essentially the same except no strip-lifting rollers are used.

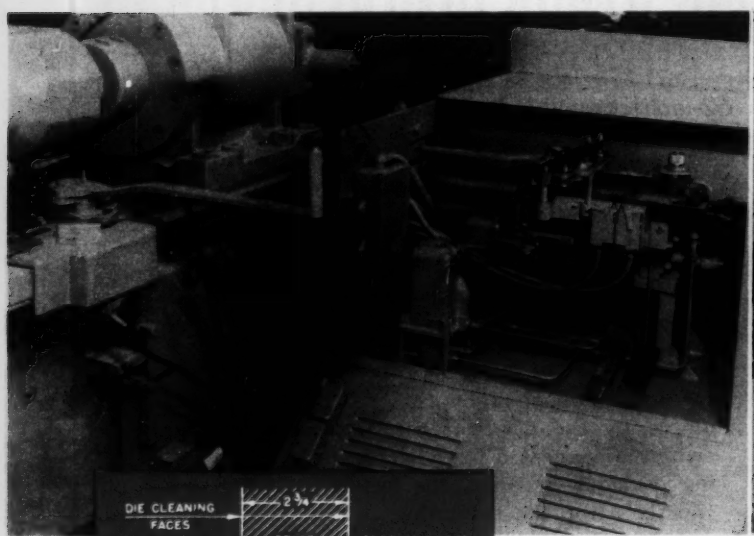
All four holders contain built-in air passages and multiple air jets having replaceable nozzles set at the correct angle for blowing scale and flash from both lower dies and top of the strip. This is most important as nothing causes faster die wear than flash left on the pressure surfaces which is subsequently imbedded in the strip and die surfaces by the clamping pressure.

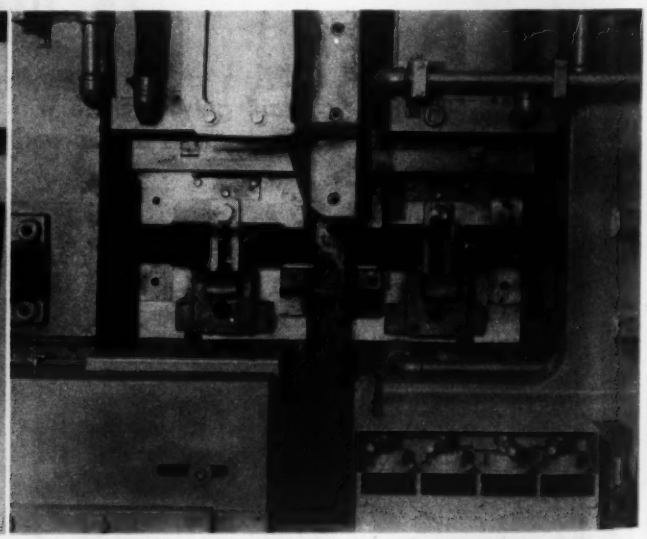
Holder Assemblies Easily Changed — Adequate maintenance of the pressure faces of the copper-alloy dies is such an important factor in weld quality —affording a subsequent low breakage record when the welds are cold reduced—that these holder assemblies were designed for quick changing in much the same way as rolls are changed on a modern rolling mill. The four holders are each retained in place by one key and a minimum of bolts which have integral wrenches with handles for quick release of the holder. A holder assembly remover quickly removes the assembly having worn dies and inserts the other containing dressed dies.

Heavy steel clamping frames carry the upper dies through the medium of hydraulically operated slides. The design is such that the upper dies float to a position as determined by the lower dies and uniformly clamp the strip over its full width. Clamping pressure on each end of the strip is divided between the current conducting dies and the steel "heeling" dies. This permits the use of a high pressure—of approximately 500,000 pounds—which is necessary to prevent slippage during upset and yet not impose excessive loads on the copper-alloy current conducting dies.

Before clamping strip for welding the ends are run against a gage bar inserted between the vertical faces of the current carrying dies to insure that the proper amount of strip projects from the dies for welding. This bar, having hardened faces that receive the impact of the strip ends, is placed between the dies and supported against the strip impact by adequate guides. It also carries hardened steel cleaner blocks for removal of any flash which might adhere to the vertical die surfaces.

After the strip ends have been run against the gage bar and clamped, the welder opens up to release the pressure of the strip ends against the gage bar before its removal. This "opening-up" feature is quite important in the prevention of bent strip ends with consequent poor welds. Gage bar control is through electrical pushbuttons for starting and electrical sequence for the remainder of the cycle.





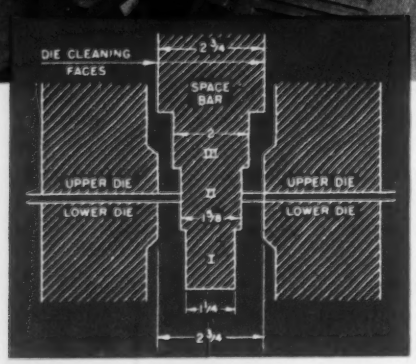


Fig. 2 (above, left)—View of the hydraulic control used on the 60-inch flash welder. Two extra flashing cams are shown at right of photo

Fig. 3 (left)—Sketch showing space settings used by the gage bar on the new welder

Fig. 4 (above)—Side view of welder showing die holder assemblies, controls, and the gage bar in place. Notice that an end cover is bolted to the gage bar

Machinery Field

By GUY HUBBARD
Machine Tool Editor

INDEX IS UP: Considerable comment has been aroused by what to many is the surprising fact that the National Machine Tool Builders' Association index of new orders for March 1950, hit 107.4. When it was down to 48.0 last July, there were many who could not see it passing the 100.0 mark again for a long time.

Forward-looking members of the association, however, were doing something about it—and they have been doing something other than drift with economic tides for a long time. I believe that they are getting results and this belief has been strengthened by what I heard at the spring meeting of the association at Chicago last week.

David Ayr, president of the association as well as of Hendey Machine Co., Torrington, Conn., went on record as predicting continued gradual improvement.

Mr. Ayr stated, "With postwar shortages long since filled and price competition back in full sway, the very difficulties encountered by our customer industries represent the machine tool industry's great opportunity.

"At long last our country's metalworking industries again are cost-conscious. That is what is opening the doors to us. With no relief in sight as far as wages and taxes are concerned, where else can the metalworking industries turn except to us? That is why the machine tool sales curve is on the uptrend for the immediate future."

When I say that forward-looking members of the association—and NMTB as a whole—have been doing something other than drift with the economic tide, I have in mind particularly the work which has been done since the end of the war in training machine tool salesmen and also in training machine tool prospects and customers.

This unique double-barreled attack has been accomplished through the sales refresher courses on the one hand, and by widespread distribution of such books as *The World's Best Investment* and *Computing Return on Invested Capital* on the other hand. Even the most skeptical must now admit that this campaign is getting results.

RESEARCH AND PRODUCTION: An interesting point brought out by Dr. Clifford C. Furnas, director, Cornell Aeronautical Laboratory, at the Westinghouse Machine Tool Forum, was the length of time which often elapses between the discovery of something in the research laboratory and its assimilation into production.

He mentioned that in most cases that time amounts to a generation—as was true in the case of nylon. In many cases the material is a by-product of research in some entirely different direction. Some of these by-products have at first been considered as "nuisances" until some practical man has come along with appreciation that here was something which the industry long needed but which it did not know existed.

On the other hand, engineering developments sometimes have been far ahead of their time because of lack of some vital ingredient which eventually came out of the research laboratory. One instance of this is the gas turbine, which was well understood in principle and of which models were built more than 100 years ago. The vital ingredient which was lacking in that case was heat-resisting material for the blades —in which incidentally there still is room for improvement.

Dr. Furnas' talk brings to mind this thought: Are there things lying dormant in research laboratories of which industry is not fully aware and for which industry has great need? On the other hand: Does industry have need for certain things which research laboratories could discover if given inspiration to do so?

All this seems to point to the need for close coordination between research and engineering development so that the right hand will know exactly what the left hand is doing—or can do. An example of how this might be accomplished is given by one company which is advertising a rare metal of peculiar characteristics in the hope that practical uses will be found for it. This looks like a big step toward cutting down on that "full generation of lag" between the laboratory and productive use of research discoveries.

EVOLUTION OF FINISHES: At the ASTE tool show in Philadelphia it was remarked that the rough wartime finish which was used in an effort to speed up production of machinery, has quite thoroughly gone out of favor. There had been some feeling that it might be continued as a cost-saving feature, but evidently its popularity was not great among those who had to clean, maintain and operate industrial machinery.

However, as in many similar instances, it actually has contributed something of lasting significance. That is, a new finish which has the appearance of "crinkle" but none of the surface roughness of the wartime variety. This new finish not only is unique and handsome in appearance, but also has the ability to cover up slight surface irregularities which are bound to be present in anything with the exception of a laboriously hand-rubbed and filled casting or weldment.

Good appearance not only has sales value but it also has a psychological effect on operators. Here then is a new one for machinery builders to try, with those things in mind.

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Pallets are placed on steel runners to prevent floor damage. New supplies are brought from reserve area by truckmen, placed at rear of active stock in the area, earlier stock being shoved forward. Orders are filled on dragline cars, one of which is in the foreground

"Facelifting"

SHIPPING CENTER CUTS DELAYS, REDUCES COSTS

BAD warehousing can tax physical efforts of employees, promote errors, delay shipments and generally cut deeply into profits.

One eastern company, Johnson & Johnson, New Brunswick, N. J., shipping thousands of carton-packed components daily decided to do something about it. Result—better working conditions, increased efficiency and reduced costs. How was it done? Just by combining available up-to-date materials handling equipment with a little ingenuity.

By "face-lifting" its shipping center, the company found itself in a position to:

Ship orders in four hours as against five days; cut supervision problems by 90 per cent; handle shipping functions of its producing plants in half the space used formerly; reduce physical effort of each employee by one-half.

Starting with the premise that total palletization is essential—in this case—all merchandise arriving from the producing plants is on pallets. On arrival, they go either to the active or reserve areas.

Shipping area occupies 180,000 square feet of the 207,000 total in the plant. The reserve section is about 60,000 square feet. Loading is from active stock, except when a pallet load or more of an item is required. Average supply on the reserve floor is enough for two and one-half days and a maximum of 30 days' volume is kept in reserve.

Order Filling Simplified — Two parallel draglines, one serving outgoing railroad cars and the other for highway truck shipments, simplify order picking. The four-wheel dragline cars, developed by the company, move along the two lines between and around rows of active goods, the cars being loaded by order pickers. Completed orders on cars continue to the end of the route for emptying.

Contributing to this efficient procedure is a fleet of six 2000-pound capacity electric fork trucks, made by Automatic Transportation Co., Chicago, which function in receiving and storing new stock. Goods are truck shifted from incoming carriers to reserve or active areas immediately upon receipt. If an active supply of an item were depleted, it would mean that a dragline car could reach the end of the line with an incomplete order, wasting time in the subsequent operations to fill the order completely.

Incoming stock is picked up by the truck at the drop area, moved to the proper bay in reserve and tiered. When needed in the active area, it is detiered and transfered from reserve.

Pallets on the active floor are lined up three-deep on steel runners which protect the floor. When bringing new pallet loads to the order picking floor, the electric trucks put the fresh load at the rear of the bay and shove the other pallets forward toward the dragline. This permits perfect rotation of finished goods stock. Empty pallets, each marked to indicate its load, are picked up and returned to the receiving department where they serve as automatic requisitions for refilling.

Adjustable Dock—Another development of the company is an adjustable hydraulic dock board with 14 inches of forward and backward movement and 16 inches of vertical movement. All 14 truck docks are so equipped.

Shipping center is designed for a 100 per cent fluctuation in volume in a matter of a few minutes. At no time does an employee have to lift or carry anything more than 4 feet. Greatest distance a dragline truck is pushed is 12 feet. Once pushed onto the dragline, trucks are "hooked up" automatically and carried along at a constant and adjustable speed.

Supervisors are able to see the entire dragline operation by walking only 60 feet. With supervision prevalent at short notice throughout the plant, bottlenecks are cleared up quickly and men and fork trucks assigned where needed to avoid delays.

Change To New

Screw Stock Steel

STEPS UP PRODUCTION 33 PER CENT

Fig. 1—On this drill press, 10,000 studs from 3/16-inch E-steel rounds were drilled with a single No. 50 drill without sharpening

STUD production at the Jamestown, N. Y. plant of Automatic Voting Machine Co. is up an average of 33 per cent and tool life on stud-making machines lengthened an average of 25 per cent. These production improvements are the result of switching from standard free-machining Bessemer screw stock—B-1113—to Jones & Laughlin's newly developed E-steel.

After the change, one drilling machine operator drilled 10,000 3/16-inch studs with one No. 50 drill without sharpening the drill. According to Automatic engineers, production of 4000 studs would have been good, using B-1113. On a 36-inch hoist screw cut 27 inches with ¾-inch 6 Acme, tool life was doubled and the screw had much cleaner and sharper threads.

Depending upon the size and shape of the part and the operations required, results were similar through-

Fig. 2—Studs like those in the foreground can be cold-peened on automatic riveting machines without prior annealing

Fig. 3—Tool life on this threading machine doubled when the new steel was used for the 36-inch hoist screw cut 27 inches with a ¾-6 Acme thread

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Fig. 4—Typical samples of the more than 700 different studs and other parts which make up a single Automatic voting machine

out the machining departments on a variety of equipment. Equipment includes a battery of Brown & Sharpe models 00C, 0G and No. 2 single spindle automatic screw machines, model 08 Cincinnati millers, drill presses and threading machines.

Cold forming properties of E-steel resulted in elimination of certain annealing operations. Some studs made of B-1113 for machinability, had to be annealed before they could be riveted in position, because they had a tendency to crack at the edges. Made of E-steel, these studs are now cold riveted in place without annealing, and without cracking at the edges.

Characteristics of the new steel are shown in the accompanying tables. Machinability ratings, based on B-1112 as 100 per cent, are generally accepted as a means for comparing the free cutting quality of steel.

Normal range of hot rolled and cold finished tensile properties for a 1-inch round is shown in Table III.

TABLE I
CHEMICAL COMPOSITION

	E-33			B-1113		
Heat	A	B	C	D	E	F
Carbon	.05	.06	.05	.10	.10	.11
Manganese	.99	.89	.83	.83	.85	.85
Phosphorus	.094	.099	.095	.099	.096	.106
Sulphur	.289	.301	.304	.310	.310	.313

TABLE II
PER CENT RELATIVE CUTTING SPEED

E Steels	Conventional Steels
E–15, 110%	B–1111, 90%
E–23, 125%	B–1112, 100%
E–33, 170%	B–1113, 135%

TABLE III
NORMAL RANGE OF MECHANICAL PROPERTIES
(Size 1-inch Round)

E–33	Yield Point Psi	Tensile Strength Psi	Elongation Per Cent in 2 inches	Red. of Area Per Cent
Hot Rolled	33/43,000	59/67,000	27/38	50/60
Cold Finished	63/76,000	73/85,000	10/20	40/50
B–1113				
Hot Rolled	35/46,000	61/70,000	25/30	45/55
Cold Finished	65/80,000	75/90,000	10/20	40/50

1 OPERATION REPLACES 5

BLANKING as well as two draws are performed in a single operation on the die shown at right in the photograph below. Previously Kralinator Products Ltd., Preston, Ontario used five operations, namely, blanking, first drawing, annealing, pickling, and final drawing to produce oil filter shells. With the new method the filter shell is made in a single operation from 14 gage, hot rolled, pickled and oiled strip, and results in a finished shell 4⅝-inches in diameter, 7¼-inches deep.

It is interesting to note that the Rockwell test results before and after drawing remain the same, whereas in the old method of production it rose 24 points after the first draw making an annealing necessary before the second draw was possible.

The principle involved in this single operation deep drawing is that the metal which is drawn over itself following the first half of the draw automatically realigns the molecules, normalizing the steel and thus makes possible the completion of the draw.

A good beginning is the first step toward a good end

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Gambling with Tool Steels?

With twist of thumb, new Crucible device selects the tool steel to fit the application

NEW approach to correct selection of tool steels, in which the application dictates the choice of steel, has been evolved and reduced to chart form. This new tool steel selection method was devised by Crucible Steel Co. of America, New York, to take "trial and error" out of tool steel selection for the smaller jobbing and specialty machine shops, large users of tool steel. These shops, of which there are tens of thousands, usually do not have trained metallurgists to make technically verified selections of tool steels.

Over two years of developmental work proved the new technique before it was incorporated in a 9-inch circular selector chart. The chart is based on 22 readily obtainable tool steels which will meet the requirements of 95 to 98 per cent of all tool steel applications.

Reduction of Costs Chief Advantage—The new selection method was developed primarily to take the guesswork out of tool steel selection, a practice which is costly to any shop. Under trial and error selection methods, a piece of tool steel costing from $10 to $25 may have $1000 to $2500 worth of labor expended on it before some unsuspected characteristic proves it a bad choice and causes it to be scrapped.

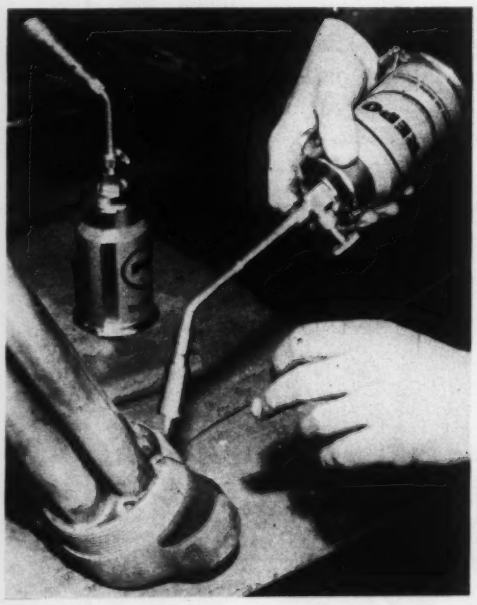
Without an accurate selection guide, shops often buy tool steel for a job they believe requires high hardness, only to have the steel break. Then, tougher steels of lower hardness are tried until the desired balance of properties is discovered. When a tough steel, lacking sufficient hardness, is tried, the same losses in material and time are experienced until the right steel is found.

Helps Small Shops—Usually only the larger manufacturers have metallurgists whose duty it is to see that the proper tool steel for the job is selected in the first place. The Crucible selection method is based on the practices used by such metallurgists to choose the right steel, and selection is reduced to quick, simple steps. Metallurgists, therefore, will find the selector chart useful as a handy reference.

When it is desired to select a tool steel by this method, the type and condition of the material to be worked, number of pieces to be made, method of working (hot or cold), and the condition of the equipment to be used, should be known.

Inventory Control and Decals

A NAME-PLATE decal, applicable to almost any type of surface and made by Palm, Fechteler & Co., New York, is a part of a novel inventory control system established at St. Louis University. The decal, featuring a box for serial number of the particular piece of equipment to which it is attached, checks with individual IBM cards which are coded for ready reference according to such classifications as location, initial cost, age, condition, etc.



NO PRIME, NO PUMP: These time consuming and nuisance value only operations are eliminated by a new mechanics' torch which lights instantly and uses a fuel packaged in "throwaway" cans. The fuel, called Prepo and made by Pressure Products Corp., Chicago, is a compound of hydrocarbons which is self-pressurizing and self-vaporizing. It seals into the torch in such a way that when the valve is opened the burner can be lighted with a match. Within 30 to 60 seconds the flame achieves its maximum heat of more than 2200°

CALENDAR OF MEETINGS

May 8-11, Liquefied Petroleum Gas Association: Convention and trade show, Palmer House, Chicago, Ill. Association is located at 11 S. LaSalle St., Chicago 3, Ill.

May 8-12, American Foundrymen's Society: Foundry congress and show, Cleveland Public Auditorium, Cleveland, O. 616 S. Michigan Ave., Chicago 5, Ill., is headquarters of society.

May 8-12, National Association of Textile Machinery Manufacturers: Exhibition, Atlantic City Auditorium, Atlantic City, N. J. Address association c/o Universal Winding Co., Providence 1, R. I.

May 11-12, National Association of Sheet Metal Distributors: Meeting, William Penn Hotel, Pittsburgh. Headquarters of association are at 505 Arch St., Philadelphia 5.

May 15-17, Industrial Furnace Manufacturers Association: Annual meeting, The Homestead, Hot Springs, Va. Association headquarters are at 420 Lexington Ave., New York.

May 18-19, American Zinc Institute Inc.: Galvanizers committee spring meeting, King Edward Hotel, Toronto, Ontario. Headquarters of institute are at 60 E. 42nd St., New York 17.

May 18-20, Automotive Engine Rebuilders Association: Meeting, Hotel New Jefferson, St. Louis. Association headquarters are at 419 N. Capitol Ave., Indianapolis, Ind.

May 19, Malleable Founders' Society: Eastern sectional meeting, Commodore Hotel, New York. Society headquarters are 1800 Union Commerce Bldg., Cleveland.

May 23-24, American Supply & Machinery Manufacturers' Association: Meeting, Atlantic City, N. J. Clark Bldg., Pittsburgh 22, is association headquarters.

May 23-26, National District Heat Association: Annual meeting, Grove Park Inn, Asheville, N. C. Association headquarters are at 827 N. Euclid Ave., Pittsburgh.

May 24-25, American Iron and Steel Institute: 58th general meeting, Waldorf-Astoria Hotel, New York. Institute headquarters: 350 Fifth Ave., New York.

May 24-25, Exhibitors Advisory Council Inc.: Second annual trade show conference, Hotel Statler, New York. Location of council is 120 Greenwich St., New York 6.

May 25-27, Society for Experimental Stress Analysis: Spring meeting, Hotel Statler, Cleveland. Address of society is P.O. Box 168, Cambridge 39, Mass.

May 26, Malleable Founders' Society: Western sectional meeting, Drake Hotel, Chicago. Society headquarters: 1800 Union Commerce Bldg., Cleveland.

May 27-30, Gas Appliance Manufacturers Association: Annual meeting, Greenbrier Hotel, White Sulphur Springs, W. Va. Association headquarters are at 60 E. 42nd St., New York.

May 29-June 9, Canadian International Trade Fair: At Toronto, Ont.

June 1-2, American Society for Quality Control: National convention and midwest conference, Milwaukee Auditorium, Milwaukee. Society headquarters are at 4949 W. 65th St. Chicago.

June 1-3, Electric Metal Makers Guild: Meeting, Shawnee Hotel, Springfield, O.

June 4-9, Society of Automotive Engineers: Summer meeting, at French Lick Springs Hotel, French Lick, Ind. Society headquarters are at 29 W. 39th St., New York.

June 5-7, American Gear Manufacturers Association: Annual meeting, The Homestead, Hot Springs, Va. Association headquarters: Empire Bldg., Pittsburgh 22, Pa.

June 5-7, Institute of Cooking and Heating Appliance Manufacturers: Annual convention and exhibit, Netherland Plaza Hotel, Cincinnati, O. Headquarters of institute are in Shoreham Hotel, Washington 8, D. C.

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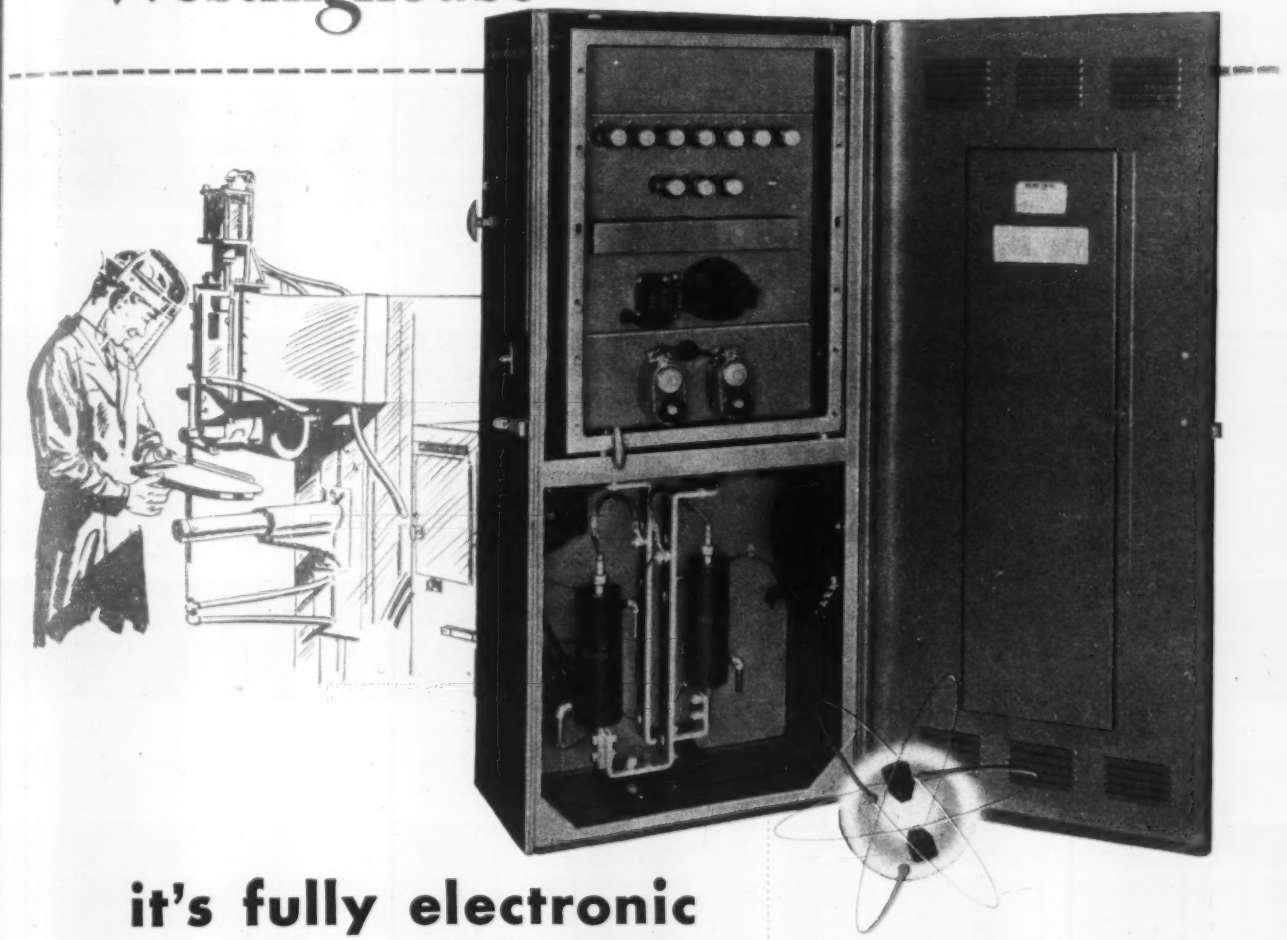

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FUNDAMENTALS OF STEELMAKING

NUMBER **25** OF SERIES

Another in a continuing series of articles on the making of steel and finishing it into products ready for the consumer. Each article is written by an outstanding authority in his particular field.

By FRED S. HIGH
Superintendent of Rolls
Crucible Steel Co. of America
Midland, Pa.

Production of MERCHANT SHAPES

The author describes the various type mills used today for rolling merchant shapes together with typical pass arrangements used for the rolling of different sections

NUMEROUS articles have been written on the art of rolling, some of which are highly technical and delve so thoroughly into the science and art that the uninitiated lose themselves in a maze of actual and theoretical data. This article is intended not as a handbook but rather as a story that may be interesting to the novice as well as the expert mill man. Where various methods of rolling are described, illustrations will be used as much as possible to convey a picture of the method of reduction rather than a description of the underlying principles of rolling.

The term "merchant shapes" is an all encompassing one and for the purpose of this article will include rounds, squares, flats, hexagons, octagons, angles, channels, tees and certain other special bar shapes. Mills producing these sections, which are the most common types of mills, are called merchant or bar mills. The name "merchant mill" was derived from the fact that these mills usually rolled those common sections of rounds, squares, flats, etc., that a merchant carried in stock. As mentioned above, the term now covers a variety of shapes, many of which have never nor will ever see a merchant's shelves.

Most common type mills in use today for the rolling of merchant bars are the cross-country and looping mills.

The cross-country mill is the most adaptable for the rolling of shapes, that is, those sections other than rounds, squares, flats, octagons and hexagons. This type of mill is made up of several stands, so placed that the bar is never in more than one stand at the same time. Some mills are so arranged that the bar travels through two or more stands in one direction, then transferred, rolled through several more

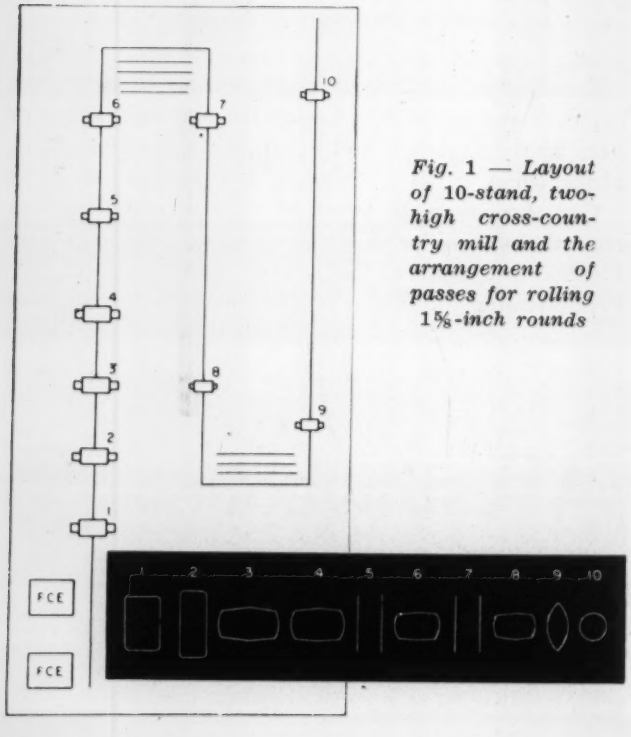


Fig. 1 — Layout of 10-stand, two-high cross-country mill and the arrangement of passes for rolling 1⅝-inch rounds

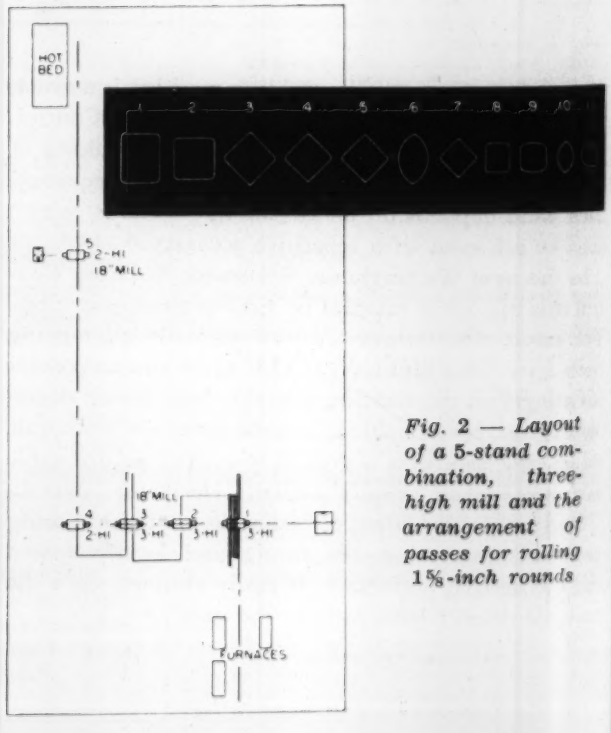


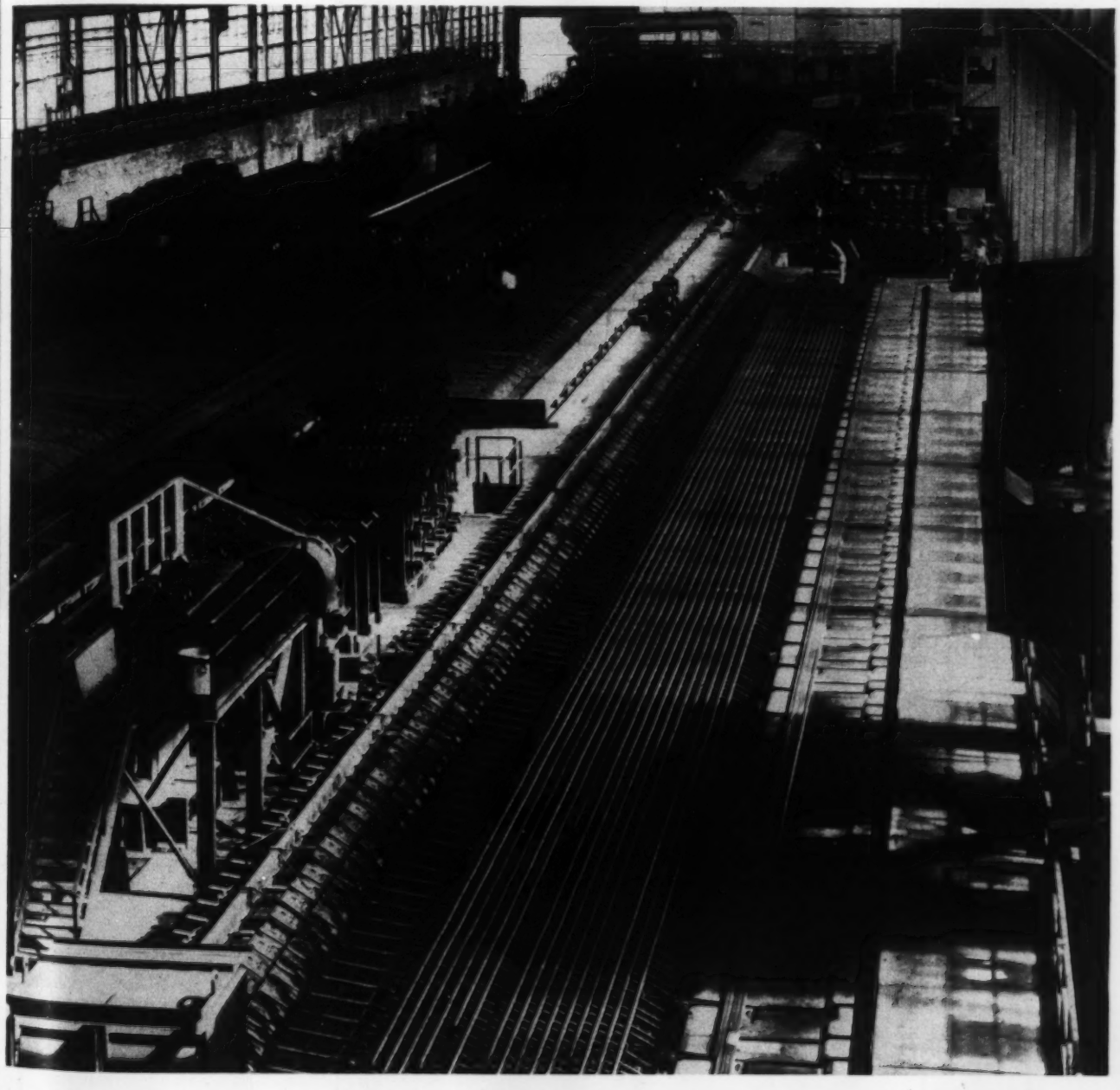
Fig. 2 — Layout of a 5-stand combination, three-high mill and the arrangement of passes for rolling 1⅝-inch rounds

stands in the opposite direction, transferred and again rolled through several stands in the original direction. Other mills are so arranged that the several stands are in tandem and all driven from the same engine or motor. Cross-country mills may be composed of two-high stands, three-high stands, or a combination of both. Fig. 1 shows a ten-stand, two-high cross-country mill and the arrangement of passes for rolling 1⅝-inch rounds, while Fig. 2 illustrates a five-stand combination, three-high and two-high mill and the arrangement of passes for rolling the same size round.

The looping mill was a natural improvement over the tandem cross-country mill, to increase production. It was reasoned that, rather than wait until the back end of the billet was free of one stand before entering it into another, the front of the billet should be looped around and immediately entered into the succeeding set of rolls.

This, of course, speeded-up the rolling operation but in turn presented another problem to the roll designer. He now had to not only figure the shapes of passes and method of reduction but also had to figure roll diameters to keep from building up a loop that would be too long and thus lose heat excessively. The need for this variation in roll diameter can readily be seen when it is realized that to keep the bar from looping excessively or from pulling in two, the volume of steel passing through the various sets of rolls must be constant at all times. Therefore, on the old tandem-type mill where all rolls were driven direct from the same engine or motor, the only way to vary the speed of the rolls—which was necessary to compensate for the reduction in area in order to keep the loop from pulling up or building out excessively—was by means of varying roll diameters. Many

Fig. 3—Scene in one of today's outstanding merchant mill installations. Note heating furnace at top of photo and load of finished rounds that are resting on the cooling bed in right foreground



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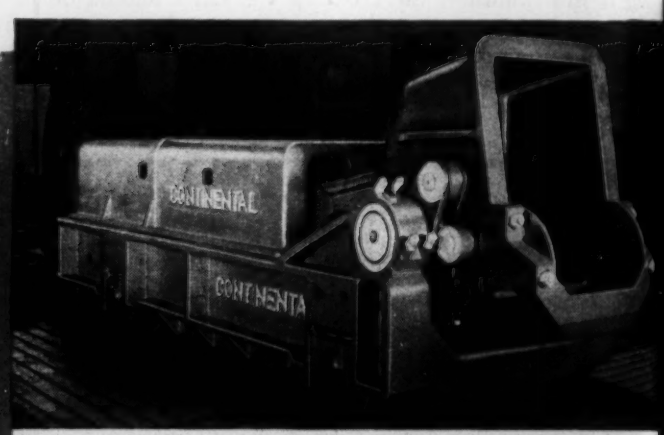
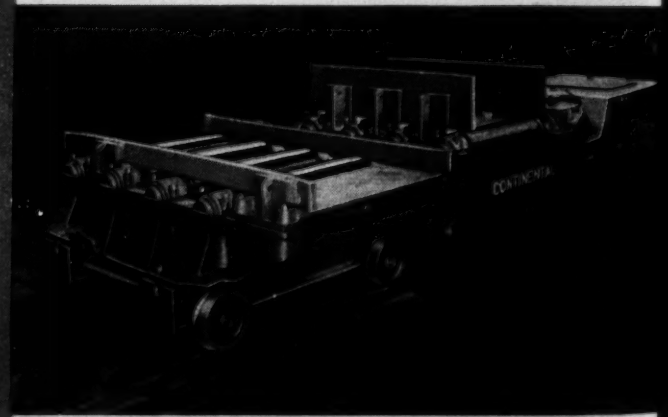
TRANSFERS
SHEARS and other auxiliary steel plant equipment

IRON, ALLOY IRON and STEEL ROLLS for ferrous and non-ferrous rolling mills; pulp and paper industry; textile industry; and milling, cereal and vegetable oil industries.

CARBON and ALLOY STEEL CASTINGS from 20 to 250,000 pounds. Complete heat treating and machining facilities.



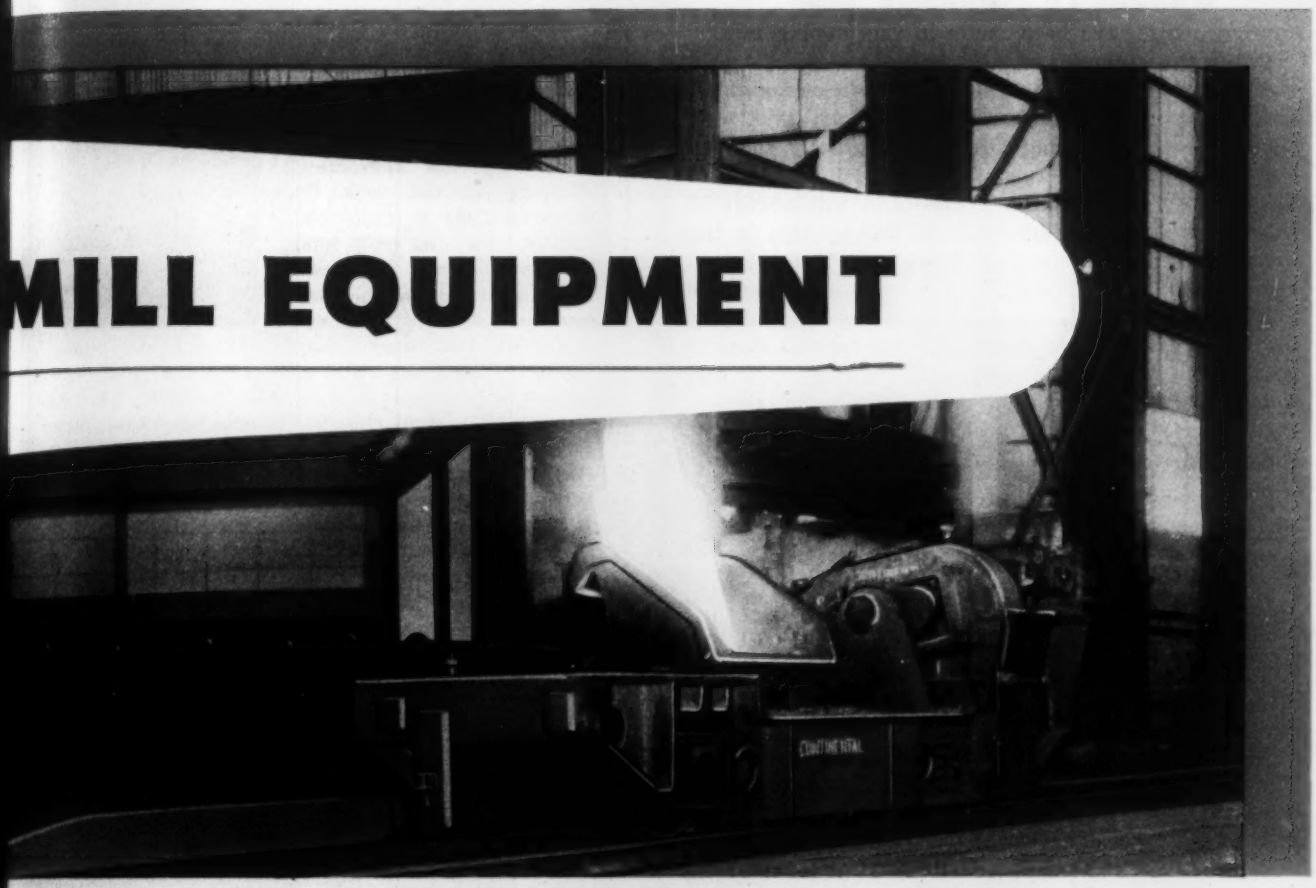
End Tilt Ingot Car



Roller Type Ingot Car and Retractable Table

Ingot Car with Operating Cab

MILL EQUIPMENT

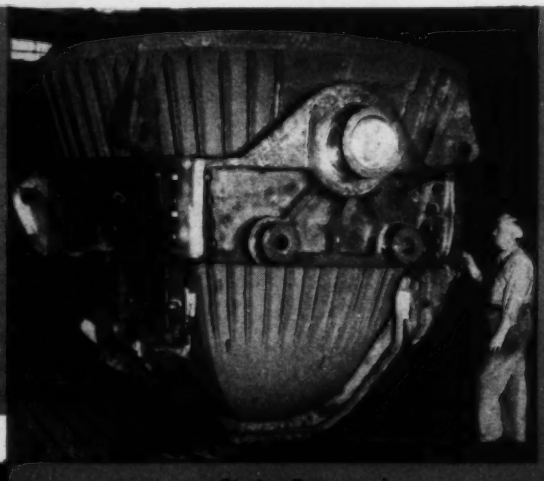


Side Tilt Ingot Car—Remote Control

Ingot Mold Car

STEEL CASTINGS

20 TO 250,000 POUNDS



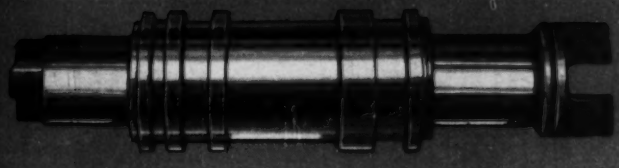
Cinder Pot

Continental

FOUNDRY & MACHINE CO.

CHICAGO · PITTSBURGH

Plants at East Chicago, Ind. • Wheeling, W.Va. • Pittsburgh, Pa.



ROLLS

IRON, ALLOY IRON AND STEEL

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improvements have been made in the looping mill.

Today the majority of such mills have from 4 to 6 and sometimes more, continuous stands of roughing and then the bar is looped through the various strand, planishing and finishing stands. Originally the bar was caught as it emerged from the delivery side of the rolls by tongs in the hands of a workman who was known as a catcher, and entered by him in the succeeding stand of rolls. This method is still in use in many mills today. However, some mills use twist roller guides, and mechanical loopers to repeat the bar from stand to stand. The mechanical method is used mostly in the rolling of rounds, flats and squares, rarely being used in the rolling of shapes. Fig. 4 shows a ten-stand mill, the first four stands of which are continuous and the remaining six stands looping, which utilizes mechanical repeaters. A lay-out for rolling ⅜-inch rounds is shown in the illustration. Fig. 5 shows lay-out for a beveled edge flat, rolled on a combination continuous and cross-country mill.

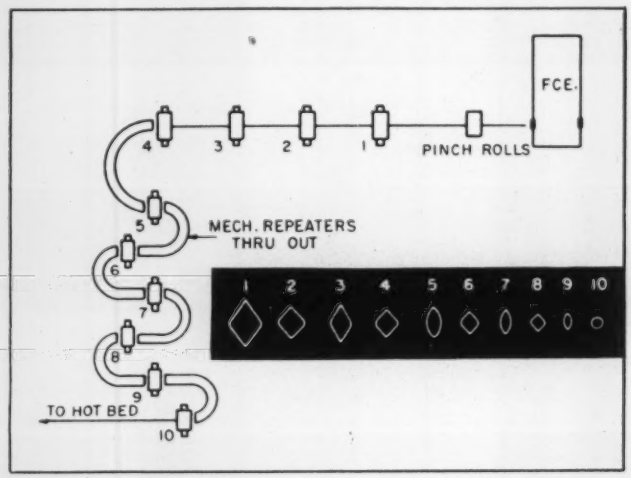


Fig. 4—Layout of a 10-stand mill, the first four stands of which are continuous and the remaining six stands looping, which utilizes mechanical repeaters. Arrangement of passes for rolling ⅜-inch rounds on the 10-inch mill

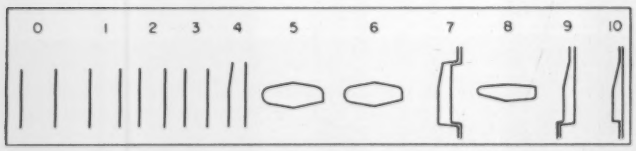
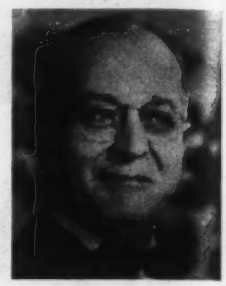


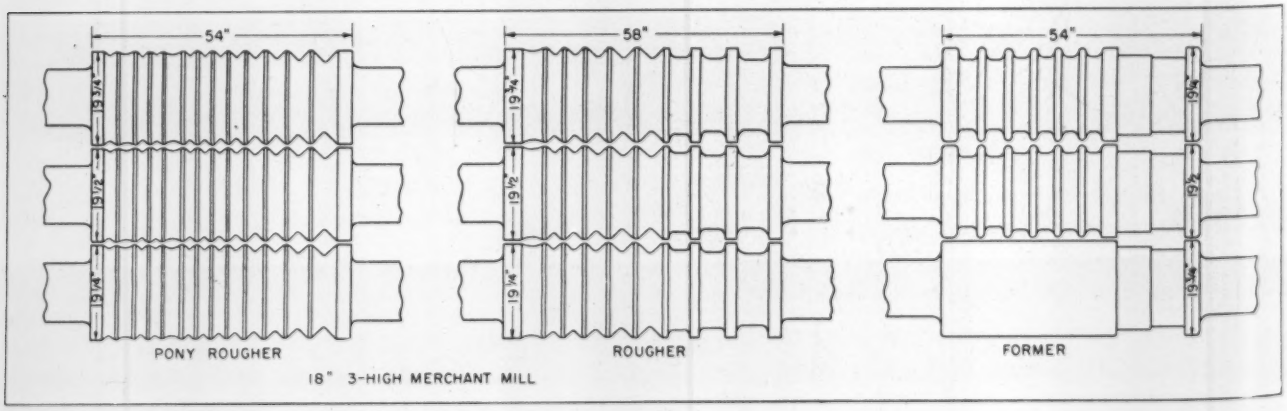
Fig. 5—Layout of passes for rolling a beveled edge flat on a 14-inch combination continuous and cross-country mill

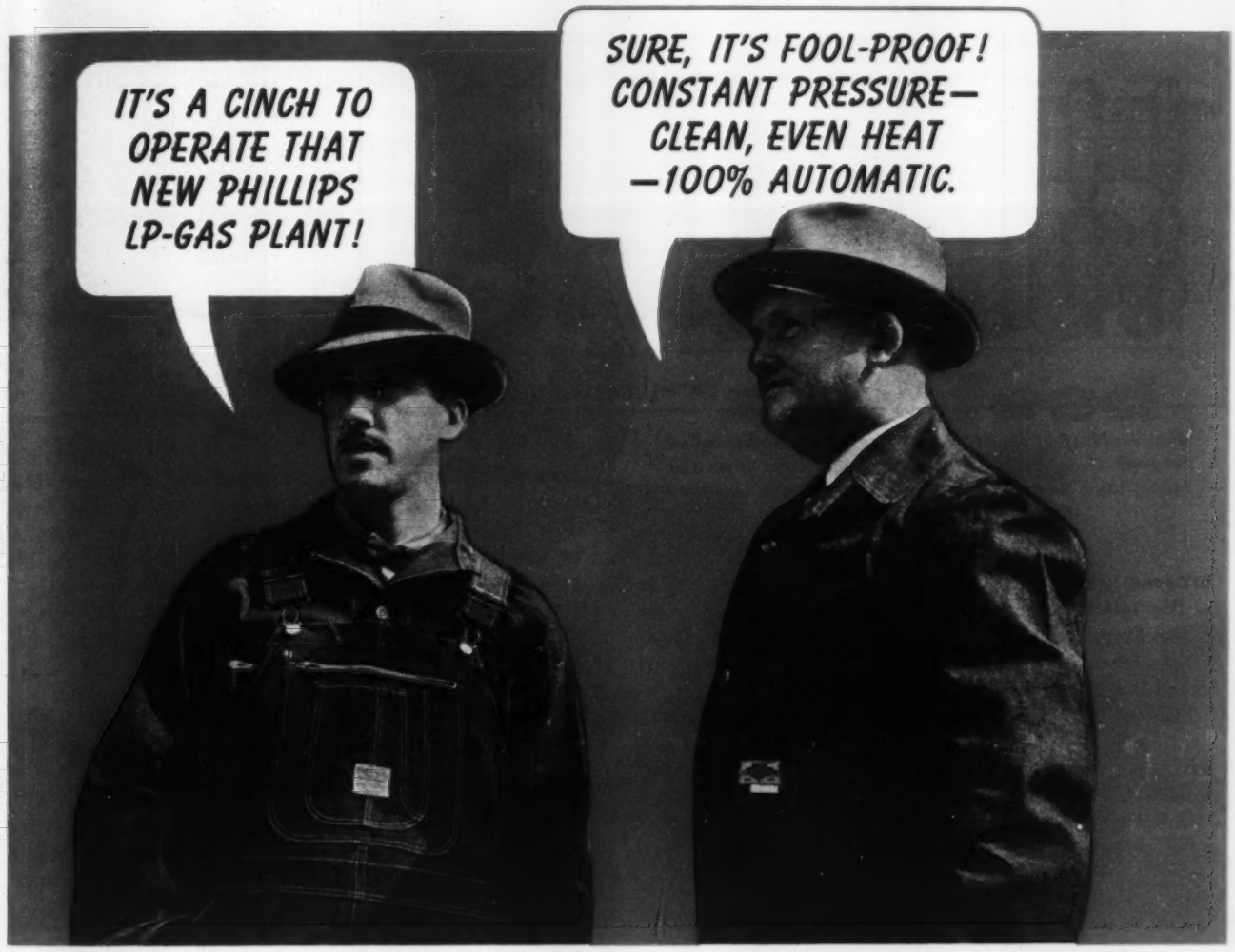


Fred S. High began his roll-turning apprenticeship at the American Iron & Steel Co., Lebanon, Pa., in 1901. After completing his apprenticeship he started with the Virginia Coal & Coke Co., Bristol, Va., as roll shop foreman in 1906. Two years later he went to the Susquehanna Iron & Steel Co., Columbia, Pa., in the same capacity. During 1909 and 1910 he was employed at the Norfolk Iron Co., Norfolk, Va. In June, 1911 he went with the Illinois Steel Co., Gary, Ind., as night general foreman. Fourteen years later he left to become associated with the Laclede Steel Co., Alton, Ill., in the same capacity until 1927, at which time he came to Pittsburgh Crucible Steel Co., Midland Works, now the Crucible Steel Co. of America as superintendent of all the roll shops. In 1930 he was appointed superintendent of finishing mills which position he held until Jan. 1, 1949. Due to a recent illness he relinquished this position and now devotes all of his time to the superintendency of the roll shops.

Steel to be rolled must be heated to the proper temperatures for its particular grade. Proper heating practice is usually recommended by the metallurgist, however, deviations are sometimes made from the recommended practices. Usually the proper practice is determined through consultation between metallurgists and mill operators. Most merchant mills rolling sizes on orders that permit a constant bloom or billet length use continuous furnaces. A continuous furnace is one in which the billets to be rolled are charged in at the back end of the furnace, pushed steadily through the heating zone of the furnace hearth, and discharged on to the approach table of the mill from the front end of the furnace. Some

Fig. 6—These rolls are used in the first three stands of the mill layout shown in Fig. 2

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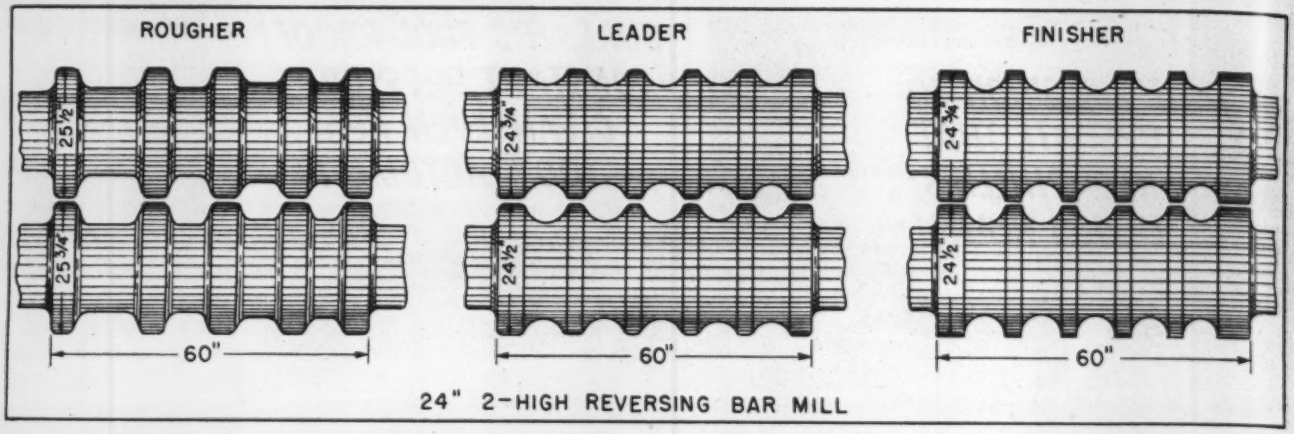
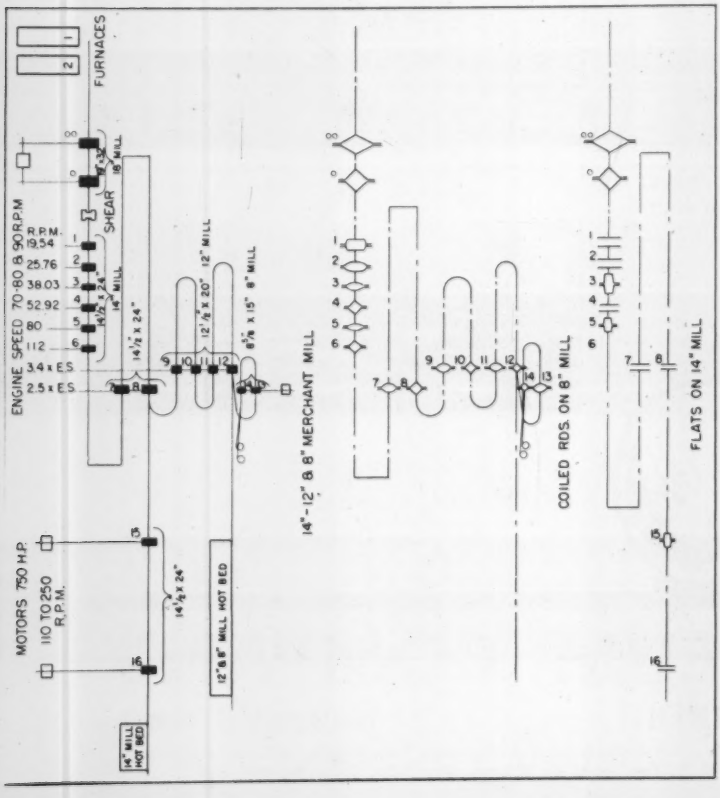


Fig. 7—Method in which various sections are rolled through the several stands of shaped rolls from the billet, then formed in the roughing stands, on down through to the finished section

furnaces are side charged and side discharged; that is, the billets are charged from the side at the rear of the furnace and after traveling through the heating zone are discharged through the side at the front end of the furnace.

The heated billets are pushed out of the furnace by means of a peel bar which is supported by and driven between two electrically operated rolls mounted outside the furnace. The peel is hand guided by one of the furnace operators. Mills that cannot use constant length blooms or billets usually use batch-type furnaces, sometimes called "in-and-out" furnaces. This type is both charged and drawn through the same door being serviced by a charging machine which is an electrically operated crane so constructed that it's arm can grip a bloom with tongs, raise it from the floor, travel laterally in front of the furnace or bank of furnaces and deposit the bloom inside the furnace. When the blooms are heated to the proper rolling temperature they are removed by the charging machine and placed on the mill approach table. This type of furnace usually contains more than one door —and as a hot bloom is removed from one door a cold one is charged in another.

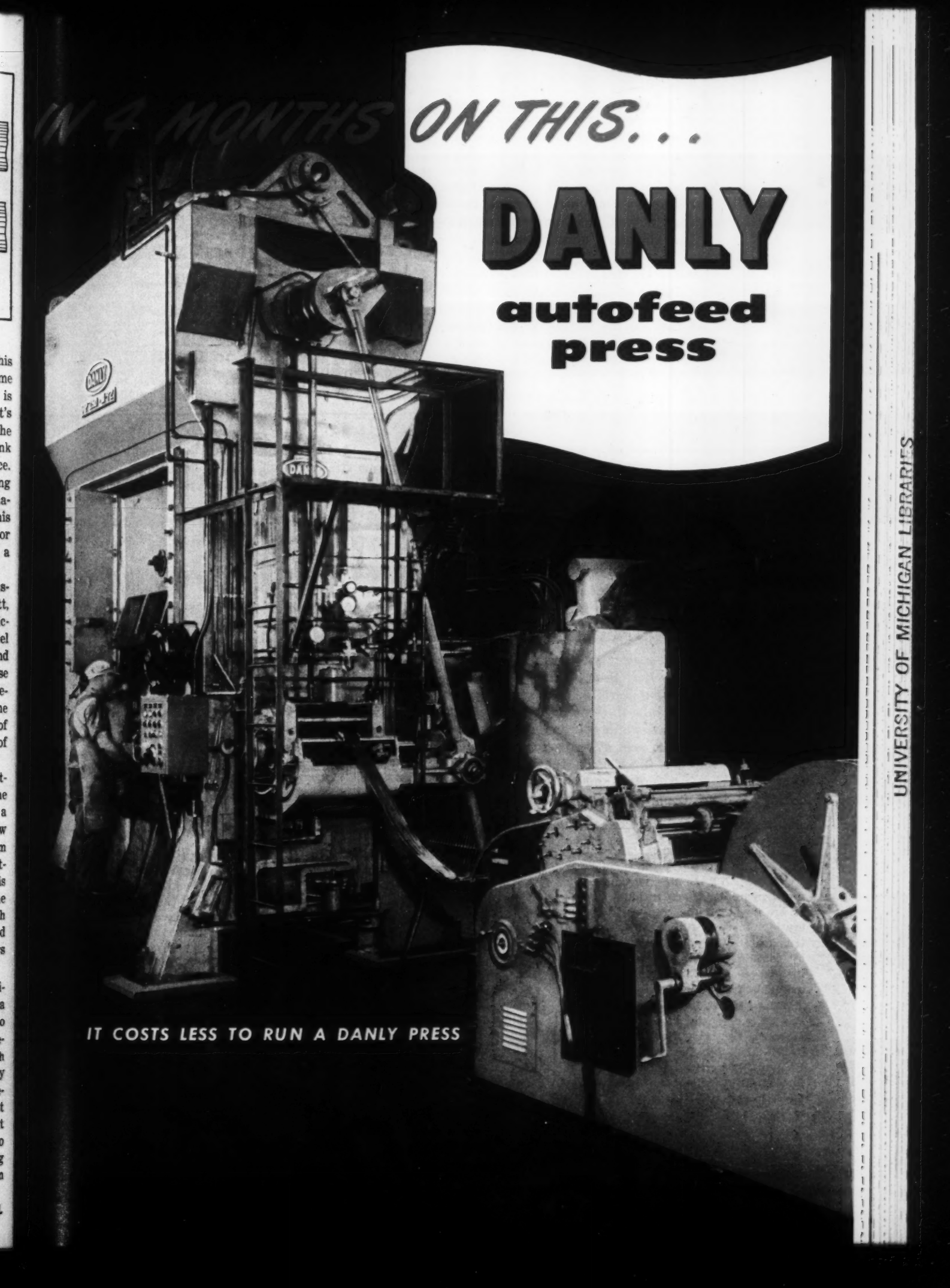
Fig. 8—Layout of a 14-inch, 12 and 8-inch merchant mill and the pass arrangements for rolling coiled rounds on the 8-inch mill and flats on the 14-inch portion of the mill



The rolls are contained in cast iron or steel housings, supported on their necks by bearings of babbitt, babbitt and brass, composition material or antifriction roller bearings. Rest bars, which are steel shelves, are mounted laterally across the front and back of the housing for supporting the guides. These guides are iron or steel castings, and are used for receiving the bar into the mill and delivering it from the mill. These guides are an extremely important part of the rolling operation, particularly in the production of shapes.

There are numerous methods of adjusting the parting between the rolls on merchant mills. In some mills the bottom roll bearing chocks rest upon a wedge-and-screw in such manner that when the screw is rotated the wedge moves, thus causing the bottom roll to be raised or lowered. On other mills the bottom roll is held solidly as far as vertical motion is concerned and the top roll is suspended from the housing cap by springs. Two screws run through the cap on either side of the housing and are directed against the top bearing chock. Rotation of the screws adjusts the rolls vertically.

After the steel has been rolled through the various stands and emerges from the finishing pass as a finished bar, it must be cut to length. Previous to being cut, however, it is delivered to a hot-bed, sometime referred to as a cooling-bed, that is long enough to contain the product of heaviest billet regularly rolled on the mill. There are almost as many designs of hot-beds as there are of mills. We will not attempt to go into detail concerning these beds but will let it suffice to state that they are provided to allow space for the bars to cool previous to being further processed or shipped to the customer. In



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some installations the bar is cut previous to being delivered to the hot-bed. In other installations it is just the reverse. The cutting is done by either saws or shears. Usually shapes are sawed to length while rounds, flats, squares, etc., are sheared. Since the shear knife is usually shaped to conform to the shape of the bar being cut, the sawing of shapes is more economical and produces a better end. Several bars are usually sheared at one time while in most cases the sawing operation is performed only on a single bar at a time. Due allowance must be made in the cutting of bars to allow for the shrinkage from the hot to the cold state. If this is not taken into consideration the bars after cooling will not meet specifications for length.

There is no set rule for the method in which steel is shaped in the various passes of a mill to produce a given finished section. An identical section rolled on six different mills could and probably would be shaped six different ways and all of them produce a satisfactory finished section. This is caused by various mill conditions such as speeds, physical layout, grades of steel rolled and to a great extent the different roll designers' ideas for developing the section.

During recent years, approximately 25 per cent of all the hot-rolled bars produced, exclusive of reinforcing bar, were subsequently cold drawn. In addition to imparting a bright, smooth surface on the bar, cold drawing also affords an exactness of size and cross-section, extreme straightness, and improved physical properties. Increases in tensile strength, yield point, and hardness are secured with a noted decrease in elongation and reduction of area. This process greatly improves the machinability of the bar.

Before drawing, it is necessary that all mill scale be removed from the bar, so they are pickled in a 5 per cent solution of sulphuric acid at approximately 150° F. Following this they are water rinsed and immersed in a hot lime water solution which removes and neutralizes all the acid adhering to the bar. The lime serves another function in that it aids as a temporary rust preventive and also as a lubricant during the drawing operation.

REPRINTS AVAILABLE

REPRINTS of previous individual chapters in the series "Fundamentals of Steelmaking" now may be obtained by addressing Readers' Service Department, STEEL, 1213 W. Third St., Cleveland 13, O. Prices range from 20 to 75 cents per reprint. Subjects covered in previous issues include:

No. 1, Production of Electric Arc Furnace Steel; No. 2, Scrap Iron and Steel; No. 3, Production of Open Hearth Steel; No. 4, Production of Tool Steel; No. 5, The Art of Roll Pass Design; No. 6, Production of Bessemer Steel; No. 7, Production of Metallurgical Coke and Resultant Coal Chemicals; No. 8, Production of Plates; No. 9, Production of Hot and Cold-Rolled Strip and Sheets; No. 10, Production of Tin Plate; No. 11, Production of Structural Shapes and Rails; No. 12, Production of Butt and Lap Welded Pipe, Conduit and Electric Metallic Tubing; No. 13, Production of Pig Iron; No. 14, Production of Seamless Steel Pipe and Tubes; No. 15, Production of Stainless Steel; No. 16, Iron Ore—Its Mining, Beneficiation and Reserves; No. 17, Transportation and Handling of Iron Ore; No. 18, Production of Wire and Wire Rods; No. 19, Production of Gray Iron Castings; No. 20, Production of Steel Castings; No. 21, Production of High Alloy Steel Castings; No. 22, Production of Wrought Iron; No. 23, Production of Forgings; No. 24, Production of Semifinished Steel.

The bars are then drawn cold through a die of the proper size and design to induce the flow of the steel in such a way that the metal is not ruptured. A reduction about 1/16-inch in diameter usually produces the most satisfactory surface and physical structure, although the amount of draft will vary with steels of different analysis.

After drawing, the shafting is straightened by means of specially designed roll straighteners, whereby they are subjected to an impulse while rotating, causing the metal to set and leave the bar in a commercially straight condition. They are polished to some extent due to a burnishing action by the rolls. Hexagons, flats and most special sections are straightened in roller-type straighteners. Material is then saw-cut to specified lengths. If a product of closer accuracy and finer surface finish is desired, bars may also be centerless ground.

ACKNOWLEDGMENT

The author wishes to thank Edgar M. D. Herold for assistance given in the preparation of his manuscript.

Lecture on Metal Stresses

FUNDAMENTAL differences in the mechanisms by which residual stresses are developed by cold-working operations such as rolling, drawing, extrusion, etc., by heat treatment and by casting and welding are covered in a 48-page illustrated booklet, available from American Society for Testing Materials, Philadelphia 3, Pa. It is a reprint of the 1949 Edgar Marburg Lecture, "Residual Stresses in Metals," by Dr. William March Baldwin Jr., research professor and director, Metals Research Laboratory, Department of Metallurgical Engineering, Case Institute of Technology, Cleveland.

Also discussed are the experimental methods used to evaluate residual stresses; various residual stress patterns found in fabrication; effects of residual stresses; and methods for the elimination of residual stresses.

Conforms to JIC Standards

REDESIGNED to conform to the new standards of the Joint Industry Conference are single and dual ram surface broaching machines and pull-up and pull-down internal broaching machines built by Colonial Broach Co. of Detroit. All electric controls are group-mounted in the single external dust-protected panel and all hydraulic controls are similarly group mounted outside of the machine on the panel on the opposite side of the machine column.

Motorized pumps are so located that they may be changed in about 1 hour's time. Filters consist of individually replaceable cartridges which are externally accessible. Filters may be replaced without draining the system of the machine. Various control units have been standardized for interchangeability and ease of maintenance and service.

Offers Design Service

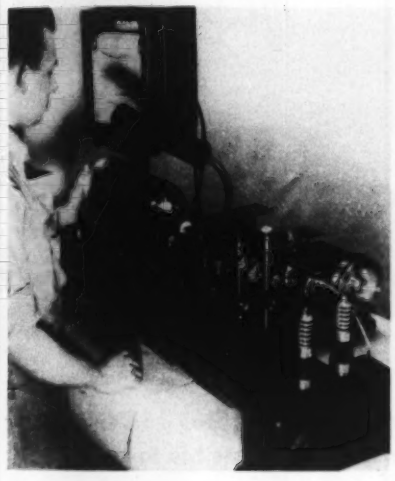
NEW service for the design and production of transformers and reactors for specialized applications, including pulse transformers, radar-type transformers, high-Q reactors, and oscillator blocking transformers is being offered by Sperry Products Inc., Danbury, Conn. Bulletin 90-105 which gives general specifications of transformers made by the company and application inquiry forms may be obtained from the company.

New Products and Equipment

Photoelectric Balancer

Precision balancing of high-speed rotating parts weighing up to 20 pounds is possible with the model M2 dynamic balancing machine made by R. B. Annis Co., Indianapolis, Ind. The production-type apparatus employs a photoelectric scanning arrangement. Independent readings for each end of the rotor, are secured by means of a simple nodal bar arrangement.

Both the phase and amount of unbalance are plotted simultaneously on



the screen of a cathode ray tube. Recording meter attachment makes a permanent, graphic record of unbalance condition of rotors as received, time required to make balancing corrections and quality of balance as completed.

Check No. 1 on Reply Card for more Details

Air-Powered Die Grinders

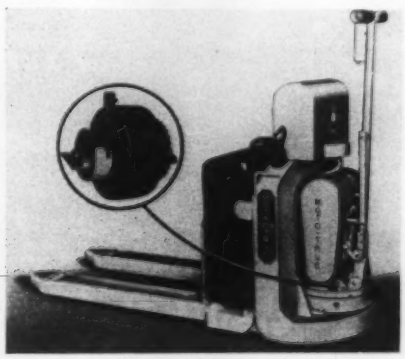
Metal removal costs may be cut with two short type heavy duty air-powered die grinders, made by Master Pneumatic Tool Co. Inc., Orwell, O. Model M-612 weighs 3 pounds 6 ounces and is 9⅛ inches overall. It may be fitted with a ⅛ or ¼-inch collet for use with carbide or high speed rotary files, as well as mounted abrasive points or a ½-inch collet for using round abrasive sticks. Straight type grinding wheels and cone or plug shaped wheels are mounted directly on the spindle. Applications may be grinding of dies, cleaning of castings, deburring and cleaning or smoothing welds.

Model M-613 has a $\frac{7}{16}$-inch spindle projection and is 9¼ inches overall. It is usually used as the previous model, but where the shorter length is preferred. Three speeds of the tools are 20,000 or 17,000 rpm as may be desired. The one-piece spindle is mounted in three standard sized ball bearings. Constant lubrication is provided by an automatic device.

Check No. 2 on Reply Card for more Details

Light and Short Truck

Automotive-type, internal expanding brakes are incorporated in the design of shorter and lighter 12 and



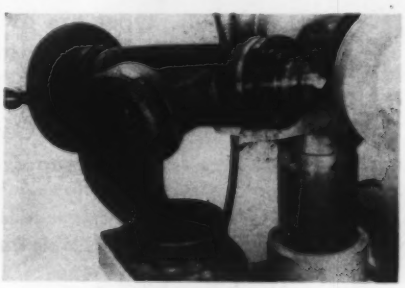
18-v pallet trucks built by Moto-Truc Co., 1953 E. 59th St., Cleveland, O. Self-synchronizing brake shoes inside a cast Meehanite drum provide smooth, brake action under all load and floor conditions.

Length of truck is 23¾ inches longer than the load, making it possible to operate in small spaces. Easy grip roller type handle controls two speeds forward and two speeds reverse. A deadman control is provided.

Check No. 3 on Reply Card for more Details

Release Grinder Speeds Output

All types of cutting grinding operation may be speeded up as much as 300 per cent with the IGC model 100-B relief grinder, produced by



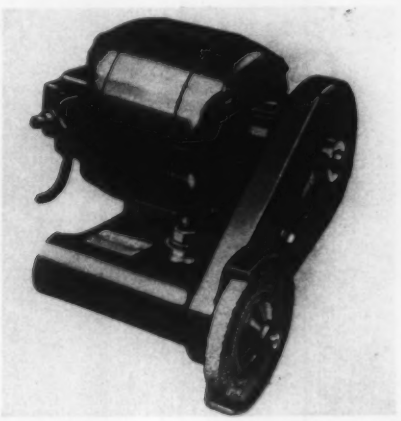
Angle Computer Division, S & D Engineering Co., 1709 Standard Ave., Glendale 1, Calif. It handles with equal speed and accuracy countersink center drills, integral pilot cutters and right or left hand pilot drills.

It fits any standard grinder and handles work from 1/16 to 1 inch in diameter with standard collets. Lift of single cam is variable from 0.001 to ⅛-inch, thus grinding for correct rake or clearance angle in addition to relief. Adjusting pins permit 1, 2, 3, 4, 6 and 12-fluted cutter grinding. Use may be for any type of small tool cutter grinding.

Check No. 4 on Reply Card for more Details

Toolpost and Bench Grinder

Dumore Co., Racine, Wis., is producing a 1/3-hp, 5000-rpm utility grinder which fits lathes of 9 to 13-inch swing. For external cylindrical



grinding and accurate to 0.0002-inch, the unit may be quickly converted to bench use for burring castings, cleaning welds, wire brushing, polishing and tool sharpening, when not needed for precision work.

Features include a heavy cast frame for rigid mounting and minimum vibration, a constant-speed, continuous-duty motor, permanent-mount spindle with preselected, preloaded and grease-sealed bearings and fast, belt-tension adjustment.

Check No. 5 on Reply Card for more Details

Wide Range Milling Machine

Speed ratios of 60 to 1 and speed ratio of 120 to 1 are incorporated in the plain and universal style No. 3MI milling machine, developed by Cincinnati Milling Machine Co., Cincinnati 9, O. Sixteen spindle speeds from 25 to 1500 rpm are changed by a single cranktype control. Mechanical spindle reverse offers a quick and easy method of changing spindle rotation to suit the cutter. Feed rates are changed in the same manner as speeds throughout the

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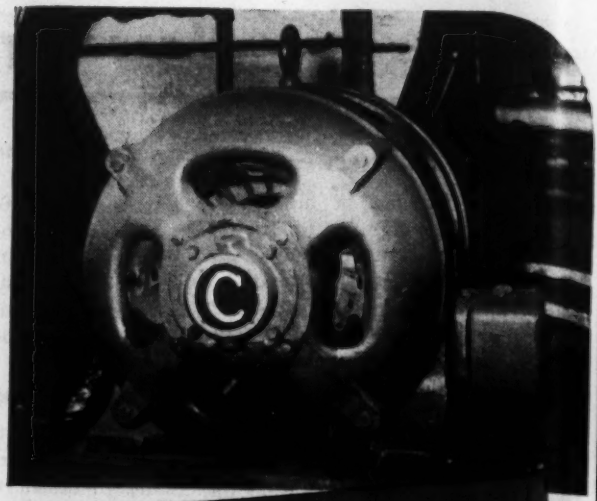
Century 40 horsepower, type SC motor driving an induced draft fan for a stack.



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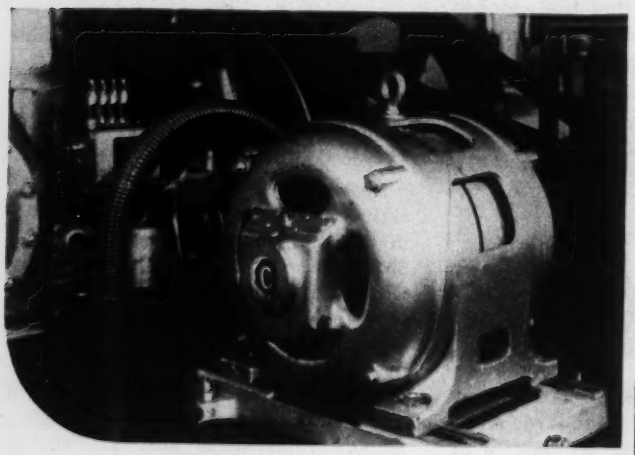
1. **Right Kind**—*to match your current supply*
2. **Right Type**—*to meet your load characteristics*
3. **Right Protection**—*against atmospheric hazards*
4. **Right Size**—*from 1/6 to 400 horsepower*

Century 150 horsepower, type SC motor driving a two-stage centrifugal pump in a city water plant.



Two Century 75 horsepower SC high torque motors driving refrigeration compressors.

The wide range of kinds, types and sizes of Century motors makes it possible to select a standard motor to meet the requirements of all popular applications.

They are available for both AC and DC current—high, normal and low torque characteristics. Types are also available for applications requiring varying speeds and reversing direction of rotation.

To protect against atmospheric hazards, Century motors are enclosed in open rated drip proof, splashproof, totally enclosed fan cooled and explosion proof frames. Many types are available with vertical and flange mountings as well as standard horizontal bases.

Specify Century motors for all your electric power requirements.

Popular sizes and standard ratings are generally available from factory and branch office stocks.

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range of feeds from ¼ to 30 inches per minute.

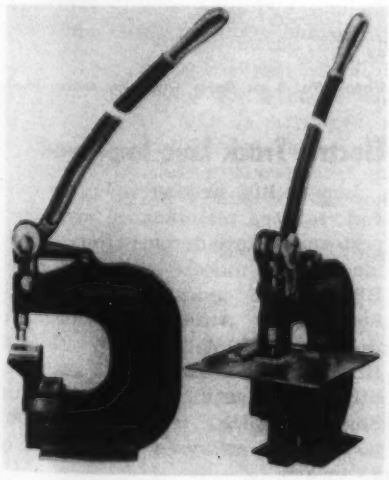
All operating controls are duplicated at the rear-working position, left-hand side of the column. Motor and mounting may be removed as one unit by removing four bolts.

Speed controls are directional and independent of each other. Cross and vertical hand cranks are automatically disengaged when their respective power feed levers are engaged. Rapid longitudinal, cross and vertical traverse are built into the machine.

Check No. 6 on Reply Card for more Details

Deep Throat Bench Punch

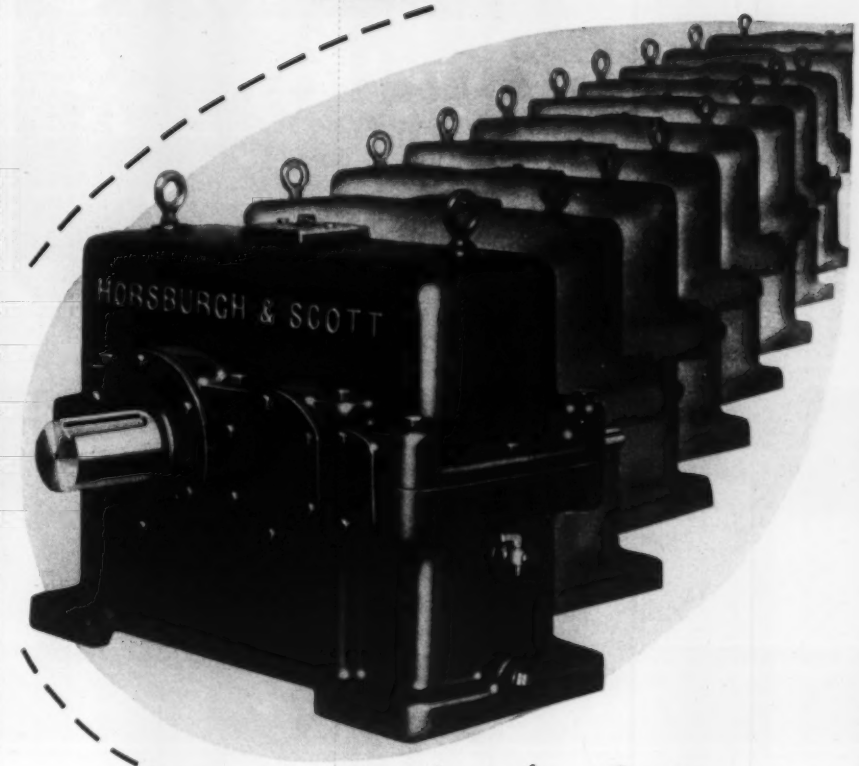
Throat depth is 7 inches and height is 5 inches on the new No. 18 Whitney-Jensen bench punch, developed by Whitney Metal Tool Co., Rockford, Ill. With the high deep



throat, it is possible to punch holes close to the web of an angle. Die shoe is both removable and adjustable, permitting use of close-fitting punches and dies.

Punches are of the roller-bearing lever type and made of durable forg-

HELICAL SPEED REDUCERS



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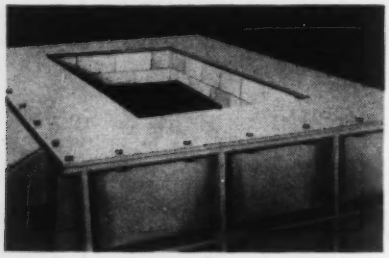
GALVANIZING by induction *

Seven ton capacity Ajax Low Frequency Induction Furnace now in use for Hot Dip Galvanizing.

another AJAX First



Showing the heavy refractory brick lining walls containing the molten zinc. No iron kettle is used.

Now Ajax engineers have developed a galvanizing furnace lined with an inert refractory material. The melt is internally heated by the electric induction principle introduced by Ajax more than thirty years ago. Costly iron kettle replacements and dross formation from iron kettle are eliminated. Internal circulation assures complete uniformity of temperature.

*

FASTER PRODUCTION • UNIFORM QUALITY
LESS MAINTENANCE • LOW OPERATING COST
ABSOLUTE TEMPERATURE CONTROL • LONG LIFE • REDUCED DROSSING • NO HOT SPOTS
SMALLER ZINC BATH POSSIBLE

AJAX ENGINEERING CORPORATION
TRENTON 7, N. J.

AJAX TAMA-WYATT INDUCTION MELTING FURNACE

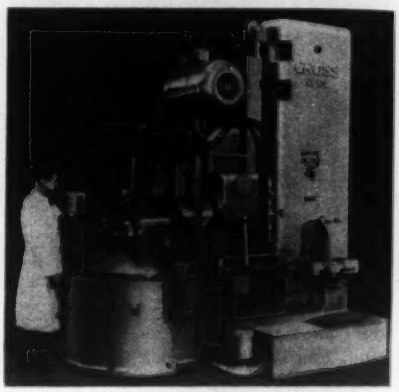
Associate Companies: AJAX METAL COMPANY, Non-Ferrous Ingot Metals and Alloys for Foundry Use
AJAX ELECTROTHERMIC CORP., Ajax Northrup High Frequency Induction Furnaces
AJAX ELECTRIC CO., INC., The Ajax-Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax-Wyatt Induction Furnaces for Melting

ings and steel plate. Available is a 10 x 10-inch work table with ¼-20 tapped holes for locating side and back gage bars. Maximum capacity is 13/16-inch round hole through 12-gage mild steel.

Check No. 7 on Reply Card for more Details

Special Milling Machine

One unskilled operator can plunge mill three gear clearances on 85 front and 85 rear planet carriers, or a total of 170 parts per hour at 100 per cent efficiency on a special machine tool built by Cross Co., Detroit 7, Mich. High production rate is made possible by use of a two-station index table



with two pieces being loaded at the first station while two others are being milled at the second.

Fluid motor drive indexes the work spindles and the index table. Clamping is by gravity operated cam. Cutter spindles are worm gear driven. Cutting speed of 425 surface feet per minute is possible. Other features include hydraulic speed, rapid traverse and standard Cross subassemblies.

Check No. 8 on Reply Card for more Details

Electric Truck Line Improved

Longer life, greater operator comfort, reduced maintenance and better performance are derived from changes made in 12 models of Skylift model BF electric industrial trucks announced by Automatic Transportation Co., 149 W. 87th St., Chicago, Ill. With the addition of 2 inches of lift to the entire series except for Shipper models, trucks tier to 132 inches with collapsed mast height of 83 inches.

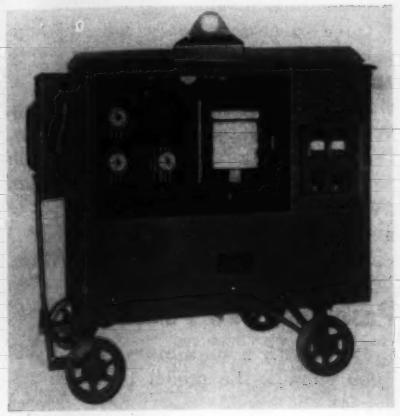
Units improved are BF-15, BF-20, BF-30, BF-40, Shipper-15, Shipper-20, and the same six models in the spark-enclosed Skylift line. Trucks range in capacity from 1000 to 4000 pounds. All electrical controls are in a completely enclosed panel. A plugging relay makes it impossible to reverse

the truck before it comes to a stop. Motors have silicone insulation, making them capable of withstanding severe overloads for long periods of time. A large seat with foam rubber padding and an adjustable back rest, provides operator comfort.

Check No. 9 on Reply Card for more Details

Two Circuit Induction Heater

Constructed so that each half unit is energized independently by its own contactor is the model BHD-S Smith-Dolan system induction heater, offered by Electric Arc Inc., 152 Jelliff Ave., Newark 8, N. J. Voltage



changes are made by a rotary selector switch; no changes are possible when heater is carrying a load. Pyrometer and program controls can be switched to either half of the unit for control. Both halves may be operated as one integrated unit.

Unit is mobile and self-contained, with fan-cooled units of 60 and 75 kva. It has a continuous rated capacity for heating 14 to 18-inch pipe welds to 1350° F for stress relieving. An output of 125 per cent of rating can be maintained for 2 hours with safety. Output side is arranged in two independently adjustable units of 1000 amp, which allows heat adjustment on each side of the weld with ease.

Check No. 10 on Reply Card for more Details

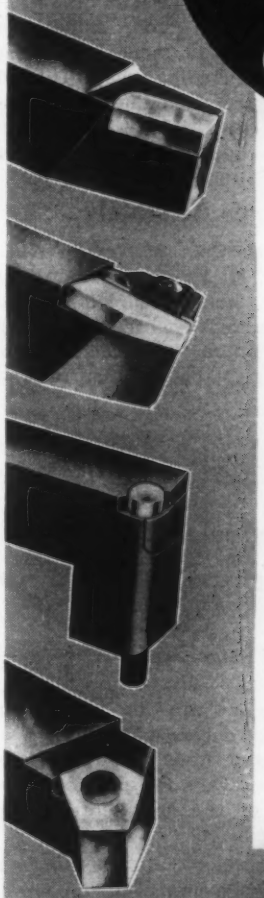
Grind Any Contour

An angular and indexing device built into the main spindle of the No. 2 jig grinder, offered by Moore Special Tool Co. Inc., Bridgeport 7, Conn., and a slot grinding attachment permit accurate grinding of any contour, whether it be regular or irregular. Also capable of grinding straight and tapered holes, the machine is provided with more spindle power and infinite feeds up or down to make chop grinding of contours possible.

The infinite range of grinding speeds, from 12,000 to 60,000 rpm,

TRUE... This Kennametal Blade Costs 2.3 Times As Much as carbide-tipped blades previously used by an engine builder

BUT... It Produces 17.4 Times as Many Cast Iron Pistons



* Details of this job on request.

You may never have a grooving job to do—but the engine builder's experience* is true of every machining job. Tools must not be judged by first cost—it's productivity that counts.

A good tool can usually pay for itself by reducing actual tool costs—but its real value is in the quality and quantity of work it produces—the amount it reduces tool maintenance—the machine downtime it prevents—the man hours it saves.

Kennametal cemented carbide tools are made by processes that are exclusive and expensive but which are worth far more than they cost—because they assure a consistently sound, dependable, superior tool material. *It's our business to provide tooling that increases productivity—not necessarily tools to meet a price.*

These efforts pay off—in the shops of thousands of users of Kennametal tools—resulting in reductions of thousands of dollars in production costs. Tell us your machining operation—we'll show you how Kennametal is doing it, or a similar job, at a saving. Better yet, we'll demonstrate Kennametal and let you decide.

KENNAMETAL Inc.
LATROBE, PA., U.S.A.
MANUFACTURERS OF SUPERIOR CEMENTED CARBIDES AND CUTTING TOOLS THAT INCREASE PRODUCTIVITY

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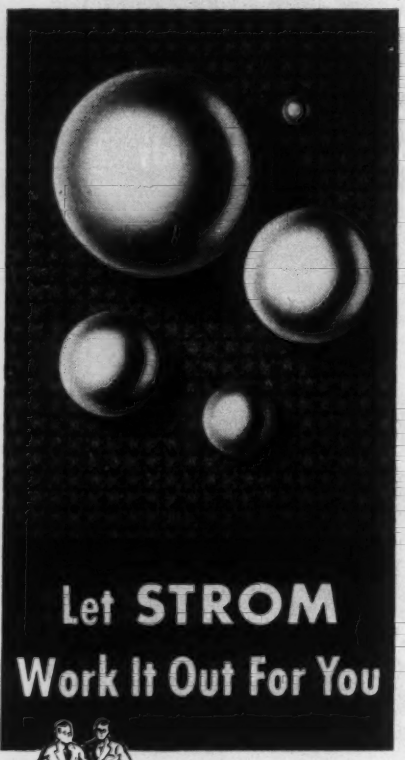
a metal ball PROBLEM?

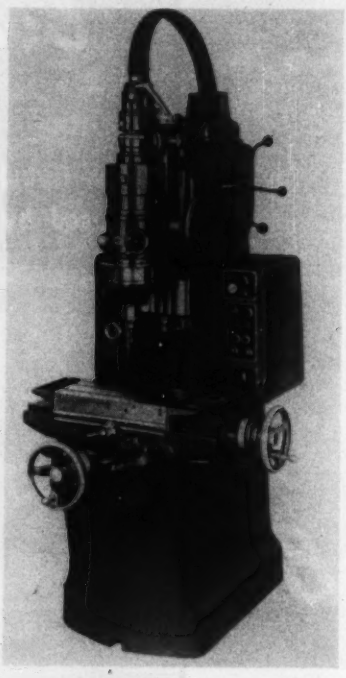


Whether it is a precision ball bearing or one of the other many ball applications in industry, your problem will not be entirely new. Strom has been in on many ball problems and knows the importance of the right ball for the job.

Strom has been making precision metal balls for over 25 years for all industry and can be a big help to you in selecting the right ball for any of your requirements. In size and spherical accuracy, perfection of surface, uniformity, and dependable physical quality, there's not a better ball made.

Strom
STEEL BALL CO.
1850 So. 54th Ave., Cicero 50, Ill.
Largest Independent and Exclusive Metal Ball Manufacturer

allows more accurate control of grinding and stock removal. Table size is 10 x 19 inches, and table movement is 10½ x 16½ inches. Distance from table top to wheel collet is 0

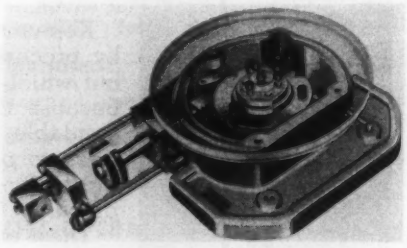


to 16 inches and from spindle to column ways is 10 inches. Grinding capacity with grinding wheels is 3/16 to 5 inches and with diamond mandrels, from 1/64 to 3/16-inch.

Check No. 11 on Reply Card for more Details

Table Indexes Accurately

A. K. Allen Co., 495 Wythe Ave., Brooklyn 11, N. Y., is manufacturing model 11EA and 11EB dial feed tables, indexing accuracy of which is plus or minus 0.002-inch. When the table is mounted upon a flat



plate, the entire working mechanism is completely enclosed. Diameters of nest plate and base are 11 and 14 inches, respectively. Height from base to the top of the nest plate is 3¾ inches.

A chrome-lined double-acting cylinder with self-adjusting Neoprene piston cups supplies the power for indexing the table. A rack, resiliently attached to a stainless steel piston rod, drives a gear which carries a pawl to actuate the index plate. Standard table can be set to index at 15, 30, 45, 60 and 90 degrees.

Check No. 12 on Reply Card for more Details

Continuous Acetylene Generator

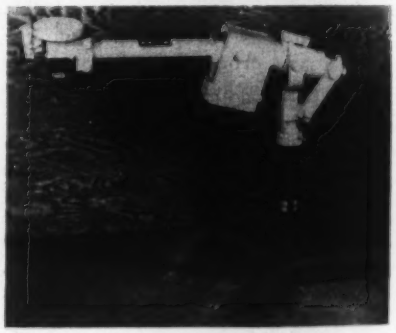
Welding shops and industrial plants requiring large quantities of acetylene will be interested in the stationary-type generator producing a continuous flow, built by Sight Feed Generator Co., W. Alexandria, O. Known as model A-Twin, it uses ¼ x 1/12 calcium carbide in a production of acetylene. Unit is designed to supply acetylene to points of usage by pipeline distribution; it is virtually automatic in operation.

Once in service, only refilling hopper with calcium carbide when empty and metering required amount of water into the tank are required. When first of two hoppers is empty, the second automatically goes in service. The new model is made in five sizes from 500 to 2400 cu ft of acetylene per hour.

Check No. 13 on Reply Card for more Details

Positions 1000 Pounds

Built with a maximum capacity of 1000 pounds, the model 14-C1000 universal balanced positioner, offered by Aronson Machine Co., Arcade, N.



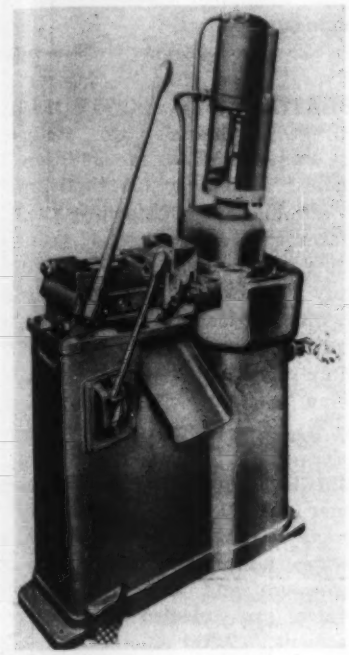
Y., may be used for holding work pieces during grinding polishing and assembly operations. Work table and work arm have brake band actuated by a knob which, when turned, draws the band around the rotation.

Check No. 14 on Reply Card for more Details

Cuts Die Casting Costs

Utilizing the principle of fast chill and high cycling speed on low cost small single impression dies, is the model M 55 A/HF-1P zinc alloy die casting machine designed by DCMT Die Casting Machine Corp., 164 Duane St., New York 13, N. Y. Direct valving "explodes" air into the cylinder, causing a rapid piston speed for delivering hot molten metal into the cavities before it has a chance to cool off.

Of 1-pound capacity, the machine has an average production of 500 to 700 shots per hour. Die sizes up to 6 x 9 inches may be used. Small



prefabricated die blanks are supplied with the machine and cavities can be machined directly into these blanks. Floor space required is 12 x 24 inches.

Check No. 15 on Reply Card for more Details

o • •

CARBON FREE OIL: Safco No. 1250, a new light colored, carbon free, high temperature lubricating oil for lubrication of bearings and chains that are continuously subjected to severe operating temperatures is available from Swan-Finch Oil Corp., New York 20, N. Y.

Check No. 16 on Reply Card for more Details

HAND HOISTS: Available from Wright Hoist Division of American Chain & Cable Co. Inc., York, Pa., the new Safeway hand hoists are made in capacities from ½ to 4 tons. Construction features modern gear drive, Weston type brake, steel load chain, steel housing, self-lubrication and drop forged top and bottom hooks.

Check No. 17 on Reply Card for more Details

MAGNETIC STARTERS: Bulletin 4120 alternating current combination magnetic starters with disconnect switches, fusible and nonfusible type, are introduced by Ward Leonard Electric Co., Mount Vernon, N. Y. They are recommended for industrial and commercial use where a magnetic full voltage starter coupled with dis-

At the MAJESTIC CO., Huntington, Indiana

dustube

. . . increases production

. . . cuts insurance rates

. . . improves working conditions

See what these officials at MAJESTIC say:

Mr. Claude Morgan, *Plant Superintendent*

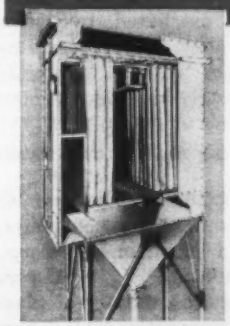
"The performance of our Dustube Dust Collector provides many important benefits: (1) Eliminates a severe dust condition; (2) Provides employee comfort and increases production through better working conditions; (3) Decreased insurance rates; (4) Reduces cost of housekeeping by preventing dust to escape into the atmosphere. The other advantages can be lumped into this statement that 'the Dustube more than pays its own way.' "

Mr. C. L. McWhorter, *Foundry Foreman*

"The performance of the Dustube has been so outstandingly satisfactory that I must admit its continual high efficiency and low cost operation is taken for granted. If we had some trouble occasionally, the benefits would be more apparent and appreciated. Naturally, we're proud of the dust-free conditions in our cleaning and grinding room which means so much in making the foundry a good place to work."

Mr. George Shutt, *Maintenance Foreman*

"We have had absolutely no trouble with the Dustube whatsoever — no new parts have been required in nearly two years of steady operation. Inspections made monthly reveal that there is no cloth wear and we should get many, many more years of trouble-free operation from the unit. All the working parts are readily accessible which makes possible quick, positive inspection and necessary lubrication."



DUSTUBE ADVANTAGES

BETTER DUST REMOVAL — Simple, fast, thorough. Shortens cleaning time.

POWER SAVINGS — Lower resistance to air flow. Lower air velocities.

HIGH EFFICIENCY — Nearly 100% efficient by convincing tests.

EASE OF INSPECTION — Clean, safe, simple. No parts to remove.

DUSTUBE FILTERS — No abrading metal contact. Easy to ship, store and handle.

FILTER REPLACEMENT -- Takes only a few seconds. Requires no tools.

American dustube COLLECTORS

OFFICES IN PRINCIPAL CITIES

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connect means at starter location is preferred over separately mounted components. Units are available in four standard sizes.

Check No. 18 on Reply Card for more Details

TOOL HOLDERS: Featuring interchangeability for different shapes of tool bits and various grades of carbides, a new tool holder is introduced by Apex Tool & Cutter Co. Inc., Shelton, Conn. Mating serrations permit tool bit to be adjusted for wear and a locking device allows tool bit to be changed without disturbing the holder in the machine.

Check No. 19 on Reply Card for more Details

AUTOMATIC DRAIN VALVE: By using a simplified ball-type seating mechanism, Crane Co., Chicago, Ill., has improved its automatic vent and drain valve to assure more accurate seating and longer life. Operation is fully automatic. A complete range of sizes is available to take care of all air requirements up to 150 psi and water up to 125 psi.

Check No. 20 on Reply Card for more Details

MARKS NAME PLATES: Model PSF-10, a special stamping fixture for marking metal name plates in mass production operations has been developed by M. E. Cunningham Co., Pittsburgh 19, Pa. It is designed for use in a small power press, screw press or kick press.

Check No. 21 on Reply Card for more Details

PARALLEL: Precision ground to 0.005-inch in their full length of high grade semisteel, the Magic parallel, made by Montgomery & Co., New York, N. Y., is particularly useful in tool and die work. Light enough to carry with work from machine to bench, its hollow construction makes it easy to grip. Parallels are available in five sizes.

Check No. 22 on Reply Card for more Details

DOUBLE SIZE ROD: Rivett Lathe & Grinder Inc., Boston, Mass., announces a new line of Gerotor hydraulic cylinders with a piston rod twice in diameter to that of standard rod size. Known as a 2:1 cylinder, it can be adapted to a variety of hydraulic circuits for the purpose of accomplishing more work and savings in time and costs.

Check No. 23 on Reply Card for more Details

GAS BOOSTERS: A line of lightweight, single-stage, direct connected gas pressure boosters is announced by Bryant Industrial Division of Affiliated Gas Equipment Inc., Cleveland, O. The cast aluminum boosters are available in 15 sizes to raise gas pressure over a range of 3-inch water column to as much as 46-inch water column.

Check No. 24 on Reply Card for more Details

FAST DRYING COATING: Wilbur & Williams Co., Boston 15, Mass., offers a quick air-drying, clear vinyl coating for concrete floors. It can be applied within 4 hours upon application of traffic primer and floor resumed to traffic within 2 hours.

Check No. 25 on Reply Card for more Details

ALL METAL CAP: Elastic Stop Nut Corp. of America, Union, N. J. makes a lightweight, all-metal cap for certain ESNA hex and anchor nuts. Designated as type K3, the cap nuts have sufficient height to insure full clearance for AN-3 and AN-4 bolts or AN-509 screws.

Check No. 26 on Reply Card for more Details

DEVELOP POWER: Production line fluid pressure boosters that save space, weight and develop working hydraulic output pressures up to 10,000 psi from ordinary plant air or hydraulic input pressures are offered in a line of convenient sizes, pressures ratios and mounting styles by Miller Motor Co., Chicago 18, Ill.

Check No. 27 on Reply Card for more Details

SAFETY TOOLS: Tools in the Safe-T-Kut line, marketed by Delaware Tool Steel Corp., Wilmington, Del., include hand chisels, pneumatic and electric hammer chisels, center punches, etc. They are made from Delsteel alloy and feature special design and heat treatment of striking end of hand tools, and magnetic particle inspection of each tool.

Check No. 28 on Reply Card for more Details

SWEEPS FLOORS: A permanent magnetic device for sweeping up or retrieving ferrous material from floors is being marketed by Eriez Mfg. Co., Erie, Pa. It operates like a carpet sweeper with a magnetic tube that completely rotates mounted between Neoprene wheels.

Check No. 29 on Reply Card for more Details

TESTS SURFACES: Model 139 shear hardness and diamond scratch tester, made by Taber Instrument Corp., North Tonawanda, N. Y., is a precision tool for testing quality of plastic materials and plastic coated surfaces to resist scratches, digs, scrapes and similar physical damage not classed as normal wear.

Check No. 30 on Reply Card for more Details

ELECTRICAL WIRING: A-Z cable, made by Plastic Wire & Cable Corp., Jewett City, Conn., is not harmed by corrosive conditions. Both the special plastic insulation and sheath on the cables and the glass fiber reinforcements are dielectric materials. It has a copper conductor on the outside surface.

Check No. 31 on Reply Card for more Details

VIBRATOR WITH CONTROLLER: F. J. Stokes Machine Co., Philadelphia, Pa., announces the addition, as standard equipment for their model 741 automatic molding press, of a vibrator with controller for the press feeding device. It provides either steady vibration to more densely fill feed tubes in loading assembly, or intermittent vibration when feeder assembly is directly over die and in unloading position.

Check No. 32 on Reply Card for more Details

PRIMER FOR METALS: Unichrome primer AP-10, offered by United Chromium Inc., New York 17, N. Y., provides adhesion on hard to coat magnesium and aluminum without chemical or electrochemical pretreatment. After metal has been cleaned, primer is applied by spraying or dipping. It can be air-dried or baked and may be top coated with lacquers, synthetics or baking enamels.

Check No. 33 on Reply Card for more Details

CUTS THROUGH STEEL: Designed for power operation by any standard drill of 2000 rpm or more, a lightweight saw gun is announced by Mid-States Welder Mfg. Co., Chicago 36, Ill. It can be used for cutting, slotting, notching or filing of practically any material. It will cut through a 36-inch steel I-beam. Unit is available in five models.

Check No. 34 on Reply Card for more Details

IMPROVED TROLLEY: For use on hand or electric powered tramrail systems, transfer bridges and tramrail cranes, an improved Ohio tramrail trolley is offered by Forker Corp., Cleveland, O. Trolley yoke swivels freely on a rolled steel kingpin to eliminate binding of wheel flanges on curves and switches of short radii. Wheels are equipped with pressure type lubrication fittings.

Check No. 35 on Reply Card for more Details

FOR MORE INFORMATION
on the new products and equipment in this section, fill in a card. It will receive prompt attention.

Market Summary

CONSUMER pressure for steel in all major classifications is increasing. Despite capacity steel mill operations, orders are still piling on producers' books. Little headway is being made catching up on arrearages. Demand for sheets and pipe is as strong as ever. Rising specifications for bars, plates and shapes are adding steadily to mill backlogs. Heavy tonnage carryover into third quarter is certain in all important products; sufficient, in fact, to usurp a large part of production for that period. Carryover, along with new summer business, will assure high-level steelmaking operations into fall. Vacation curtailments are expected to intensify tight supply conditions, which, in sheets and strip, now rival the acute shortage situation experienced in 1947-48.

DEMAND— Surprising vitality is shown by demand, coming from all directions. Building steel business is booming, headed toward a high level for the year. Railroad car shops are specifying freely, some accumulating inventory. Automotive requirements show signs of soaring to new heights, especially with the Chrysler strike settled and that company's parts suppliers likely to step up specifying. Appliance needs continue unsatisfied. Farm implement, roadbuilding and general equipment builders are exerting increasing pressure for shipments. Only here and there are any soft spots noted in hard goods lines.

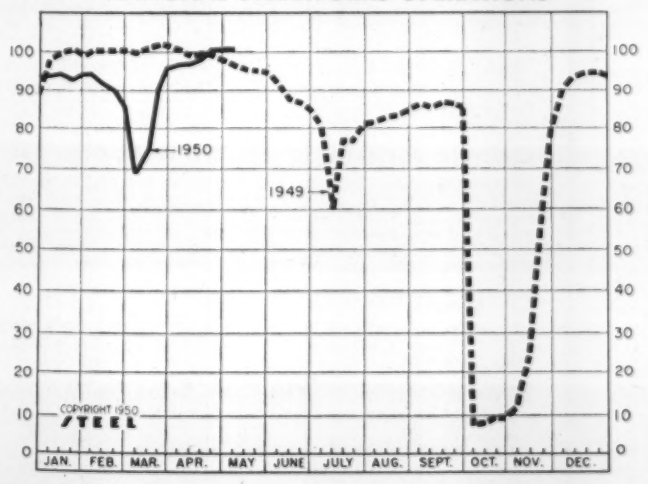
SUPPLY— Little relief for tight supply in the various products is likely before late summer at earliest. Sheetmakers' bookings extend far into third quarter. Despite efforts to keep commitments under control they are making little progress clearing away arrearages. Some carbon bar producers are booked into August with demand increasing. Cold-finished bar shipments extend into July. Public building projects are taking more structural tonnage, deliveries on which extend 10 to 12 weeks.

OPERATIONS— For the third consecutive week steelmaking furnaces are operating at 100 per cent capacity or better. Estimated national ingot rate held at 100.5 per cent last week, equivalent to output of 1,910,000 tons of ingots and steel for castings. Increases by districts were: 4.5 points to 82 per cent in St. Louis, 2 points to 97 in eastern Pennsylvania, and 1 point to 107 in Youngstown. Production eased 3 points to 103 per cent in Cincinnati, 1 point to 93 in the Far West, and from revised rates the preceding week, 3 points to 101 at Pittsburgh, and 1 point to 104.5 at Chicago and 96 per cent at Cleveland.

RAW MATERIALS— Stimulated by prospects of active steelmaking over coming months the iron and steel scrap market is bullish. Mills are taking in tonnage but chief activity appears in brokers' efforts to cover commitments. Partially as result of continued high-level ingot production, scrap prices have advanced for nine consecutive weeks. Iron ore is beginning to come down the lakes in volume allaying fears of a shortage. Opening of lake shipping was delayed several weeks by bad ice conditions. Only 349,000 tons of ore were moved up to May 1. By that date last year 9,405,731 were moved.

PRICES— Except for an advance of $5 per ton on 20-gage and heavier cold-rolled strip by one small producer, the steel market is without price feature. However, some consumers anticipate increases later in the year due to continued rising labor and raw material costs. STEEL's price composite on steelmaking scrap is $30.92 compared with $30.17 the preceding week and $23.25 in the like week a year ago. STEEL's weighted index of finished steel prices is unchanged at 156.13 as is the arithmetical finished steel price composite at $93.23. Pig iron price composites are steady at $46.47 for No. 2 foundry, $45.97 for basic, and $47.27 for malleable.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of Ingot Capacity Engaged in Leading Districts

	Week Ended May 6	Change	Same Week 1949	Same Week 1948
Pittsburgh	101	— 3*	96	96
Chicago	104.5	— 1*	100	87.5
Eastern Pa.	97	+ 2	93	86
Youngstown	107	+ 1	105	103
Wheeling	102.5	0	91.5	86
Cleveland	96	— 1*	98	93.5
Buffalo	104	0	101.5	87.5
Birmingham	100	0	100	100
New England	88	0	62	81
Cincinnati	103	— 3	103	91
St. Louis	82	+ 4.5	75.5	89.5
Detroit	102	0	108	100
Western	93	— 1	92	..
Estimated national rate	100.5	0	97	92

Based on weekly steelmaking capacity of 1,906,267 net tons for 1950; 1,843,516 net tons for 1949; 1,802,476 net tons for 1948.
*Change from revised rate.

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Composite Market Averages

	May 4 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
FINISHED STEEL INDEX, Weighted:					
Index (1935-39 av.=100)	156.13	156.13	156.13	152.90	101.10
Index in cents per lb....	4.230	4.230	4.230	4.142	2.739
ARITHMETICAL PRICE COMPOSITES:					
Finished Steel, NT	$93.23	$93.23	$93.18	$93.55	$57.55
No. 2 Fdry. Pig Iron, GT	46.47	46.47	46.47	46.32	24.67
Basic Pig Iron, GT	45.97	45.97	45.97	45.85	24.00
Malleable Pig Iron, GT..	47.27	47.27	47.27	47.27	25.29
Steelmaking Scrap, GT..	30.92	30.17	28.85	23.25	19.17

Weighted finished steel index based on average shipments and prices of the following 14 representative products during 5-year base period 1935-39: Structural shapes, plates, rails, hot-rolled and cold-finished bars, pipe, wire, nails, tin plate, hot and cold-rolled sheets, galvanized sheets, hot and cold-rolled strip. For complete explanation see STEEL, Sept. 19, 1949, p. 54.

Arithmetical steel price composite based on same products as the weighted finished steel index with the exception of rails, cold-finished bars, galvanized sheets and hot-rolled strip.

Basic and No. 2 foundry pig iron composites are based on average prices at Pittsburgh, Bethlehem, Birmingham, Buffalo, Chicago, Cleveland, Granite City, Youngstown. Malleable composite based on same points, except Birmingham.

Steelmaking scrap composite based on average prices of No. 1 heavy melting steel at Pittsburgh, Chicago and Philadelphia.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS

	May 4 1950	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.45	3.45	3.45	3.35	2.15
Bars, H.R., Chicago	3.45	3.45	3.45	3.35	2.15
Bars, C.F., Pittsburgh	4.10–15	4.10–15	4.10–15	3.95-4.00	2.65
Shapes, Std., Pittsburgh ..	3.40	3.40	3.40	3.25	2.10
Shapes, Std., Chicago	3.40	3.40	3.40	3.25	2.10
Plates, Pittsburgh	3.50	3.50	3.50	3.40	2.20
Plates, Chicago	3.50	3.50	3.50	3.40	2.20
Plates, Coatesville, Pa. ..	3.60	3.60	3.60	3.50	2.20
Plates, Sparrows Point, Md.	3.50	3.50	3.50	3.45	2.20
Plates, Claymont, Del.	3.60	3.60	3.60	3.65	2.20
Sheets, H.R., Pittsburgh..	3.35	3.35	3.35	3.25	2.20
Sheets, H.R., Chicago ...	3.35	3.35	3.35	3.25	2.20
Sheets, C.R., Pittsburgh ..	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Chicago	4.10	4.10	4.10	4.00	3.05
Sheets, C.R., Detroit	4.30	4.30	4.30	4.20	3.15
Sheets, Galv., Pittsburgh..	4.40	4.40	4.40	4.40	3.65
Strip, H.R., Pittsburgh ...	3.25	3.25	3.25	3.25–30	2.10
Strip, H.R., Chicago	3.25	3.25	3.25	3.25	2.10
Strip, C.R., Pittsburgh ...	4.15	4.15	4.15	4.00–75	2.80
Strip, C.R., Chicago	4.30	4.30	4.30	4.00–15	2.90
Strip, C.R., Detroit	4.35–40	4.35–40	4.35–40	4.20–50	2.90
Wire, Basic, Pittsburgh ..	4.50	4.50	4.50	4.15	2.60
Nails, Wire, Pittsburgh...	5.30	5.30	5.30	5.15	2.80
Tin plate, box, Pittsburgh.	$7.50	$7.50	$7.50	$7.75	$5.00

SEMIFINISHED

Billets, forging, Pitts.(NT)	$63.00	$63.00	$63.00	$61.00	$40.00
Sheet bar, mill (NT)	57.00–58.00	57.00–58.00	57.00–58.00	67.00	34.00
Wire rods, 7/32-3/8", Pitts...	3.85	3.85	3.85	3.775	2.00

PIG IRON, Gross Ton

Bessemer, Pitts.	$47.00	$47.00	$47.00	$47.00	$25.50
Basic, Valley	46.00	46.00	46.00	46.00	24.50
Basic, del. Phila.	49.44	49.44	49.44	49.39	26.34
No. 2 Fdry, Pitts.	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, Chicago	46.50	46.50	46.50	46.25	25.00
No. 2 Fdry, Valley	46.50	46.50	46.50	46.50	25.00
No. 2 Fdry, del. Phila. ...	49.94	49.94	49.94	49.89	26.84
No. 2 Fdry, Birm.	42.38	42.38	42.38	41.38	21.38
No. 2 Fdry. (Birm.)del.Cin.	49.08	49.08	49.08	47.43	25.06
Malleable, Valley	46.50	46.50	46.50	46.50	25.00
Malleable, Chicago	46.50	46.50	46.50	46.50	25.00
Charcoal, Lyles, Tenn. ...	60.00	60.00	60.00	66.00	33.00
Ferromanganese, Etna, Pa.	175.00	175.00	175.00	175.00	140.33*

* Delivered, Pittsburgh.

SCRAP, Gross Ton

No. 1 Heavy Melt. Pitts...	$35.00	$34.00	$32.25	$24.00	$20.00
No. 1 Heavy Melt. E. Pa..	27.25	27.00	25.25	22.75	18.75
No. 1 Heavy Melt. Chicago	30.50	29.50	29.00	23.00	18.75
No. 1 Heavy Melt. Valley..	34.75	33.75	32.75	22.00	20.00
No. 1 Heavy Melt. Cleve. .	31.25	30.25	29.25	18.50	19.50
No. 1 Heavy Melt. Buffalo.	29.75	29.75	29.75	23.50	19.25
Rails, Rerolling, Chicago..	47.50	46.50	46.50	27.75	22.25
No. 1 Cast, Chicago	42.50	42.50	41.00	27.50	20.00

COKE, Net Ton

Beehive, Furn., Connlsvl...	$14.25	$14.25	$14.25	$14.25	$7.00
Beehive, Fdry., Connlsvl...	16.00	16.00	16.00	16.75	7.75
Oven Fdry., Chicago	21.00	21.00	21.00	20.40	13.35

NONFERROUS METALS

Copper, del. Conn.	19.50	19.50	18.50	18.50	12.00
Zinc, E. St. Louis	11.50	11.00	10.50	12.50	8.25
Lead, St. Louis	11.05	10.80	10.30	14.825	6.35
Tin, New York	77.00	76.50	76.00	103.00	52.00
Aluminum, del.	17.00	17.00	17.00	17.00	15.00
Antimony, Laredo, Tex. ..	24.50	24.50	24.50	38.50	14.50
Nickel, refinery, duty paid.	40.00	40.00	40.00	40.00	35.00

Pig Iron

For key to producing companies, turn next page.
Minimum delivered prices do not include 3% federal tax.

PIG IRON, Gross Ton

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$48.00	$48.50	$49.00	$49.50
Newark, del.	50.63	51.13	51.63	52.13
Brooklyn, N.Y., del.	....	52.79	53.29	....
Birmingham District				
Birmingham R2	41.88	42.38	....	....
Birmingham S9	41.88	42.38	....	....
Woodward, Ala. W15	41.88	42.38	....	....
Cincinnati, del.	....	49.08	....	....
Buffalo District				
Buffalo H1, R2	46.00	46.50	47.00	....
Tonawanda, N.Y., W12	46.00	46.50	47.00	....
N. Tonawanda, N.Y., T9	....	46.50	47.00	....
Boston, del.	55.26	55.76	56.20	....
Rochester, N.Y., del.	48.63	49.13	49.63	....
Syracuse, N.Y., del.	49.58	50.08	50.58	....
Chicago District				
Chicago I-3	46.00	46.50	46.50	47.00
Gary, Ind. C3	46.00	....	46.50	....
IndianaHarbor, Ind. I-2	46.00	....	46.50	....
So. Chicago, Ill. W14 Y1	46.00	46.50	46.50	....
So. Chicago, Ill. C3	46.00	....	46.50	47.00
Milwaukee, del.	47.89	48.39	48.39	48.89
Muskegon, Mich., del.	....	51.98	51.98	....
Cleveland District				
Cleveland A7	46.00	46.50	46.50	47.00
Cleveland R2	46.00	46.50	46.50	....
Akron, del. from Cleve.	48.39	48.89	48.89	49.39
Lorain, O. N3	46.00	....	....	47.00
Duluth I-3	....	....	46.50	....
Erie, Pa. I-3	46.00	46.50	46.50	47.00
Everett, Mass. E1	....	50.50	51.00	....
Fontana, Calif. K1	52.00	52.50	....	....
Geneva, Utah G1	46.00	46.50	....	....
Seattle, Tacoma, Wash., del.	....	54.20	....	....
Portland, Oreg., del.	....	54.20	....	....
LosAngeles, SanFrancisco, del. ...	53.70	54.20	....	....
GraniteCity, Ill. M10	47.90	48.40	48.90	....
St. Louis, del. (incl. tax)	48.65	49.15	49.65	....
Ironton, Utah C11	46.00	46.50	....	....
Minnequa, Colo. C10	47.00	47.50	47.50	....
Pittsburgh District				
NevilleIsland, Pa. P6	46.00	46.50	46.50	47.00
Pitts, N.&S. sides, Ambridge, Aliquippa, del.	47.19	47.69	47.69	48.19
McKeesRocks, del.	46.95	47.45	47.45	47.95
Lawrenceville, Homestead, McKeesport, Monaca, del.	47.44	47.94	47.94	48.44
Verona, del.	47.90	48.40	48.40	48.90
Brackenridge, del.	48.13	48.63	48.63	49.13
Bessemer, Pa. C3	46.00	....	46.50	47.00
Clairton, Rankin, So. Duquesne, Pa. C3	46.00	....	....	....
McKeesport, Pa. N3	46.00	....	....	47.00
Sharpsville, Pa. S6	46.00	46.50	46.50	47.00
Steelton, Pa. B2	48.00	48.50	49.00	49.50
Steubenville, O. W10	46.00	....	....	....
Struthers, O. S16	46.00	....	....	....
Swedeland, Pa. A3	48.00	48.50	49.00	49.50
Philadelphia, del.	49.44	49.94	50.44	50.94
Toledo, O. I-3	46.00	46.50	46.50	47.00
Cincinnati, del.	51.01	51.51	....	....
Troy, N.Y., R2	48.00	48.50	49.00	49.50
Youngstown District				
Hubbard, O. Y1	46.00	46.50	46.50	....
Youngstown C3	46.00	....	....	47.00
Youngstown Y1	46.00	46.50	46.50	47.00
Mansfield, O. del.	50.26	50.76	50.76	51.26

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si over base grade, 1.75-2.25%.

Phosphorous: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1%, or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si to 11.50%)

Jackson, O. G2, J1	$57.00
Buffalo H1	58.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $1 for 0.045% max. P)

NiagaraFalls, N.Y. P15	$71.50
Keokuk, Iowa, Openhearth & Fdry, frt. allowed K2	77.00
Keokuk, Iowa, OH & Fdry., 12½ lb. piglets, frt. allowed K2..	82.00
Wenatchee, Wash., OH & Fdry, frt. allowed K2	77.00

CHARCOAL PIG IRON, Gross Ton

(Low phos. semi-cold blast; differential charged from silicon over base grade; also for hard chilling iron Nos. 5 x 6)

Lyles, Tenn. T3	$60.00

LOW PHOSPHOROUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$51.00
Steelton, Pa. B2	54.00
Philadelphia delivered	57.00
Troy, N.Y. R2	54.00

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Semifinished and Finished Steel Products

Mill prices as reported to STEEL, May 4, 1950; cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on next two pages.

INGOTS, Carbon, Forging (NT)

Detroit R7 ..... $50.00
Munhall,Pa. C3 ..... 50.00

INGOTS, Alloy (NT)

Detroit R7 ..... $51.00
Houston,Tex. S5 ..... 59.00
Midland,Pa. C18 ..... 51.00
Munhall,Pa. C3 ..... 51.00
So.Duquesne,Pa. C3 ... 51.00

BILLETS, BLOOMS & Slabs
Carbon, Rerolling (NT)

Bessemer,Pa. C3 ..... $53.00
Clairton,Pa. C3 ..... 53.00
Conshohocken,Pa. A3 .. 58.00
Ensley,Ala. T2 ..... 53.00
Fairfield,Ala. T2 ..... 53.00
Fontana,Cal. K1 ..... 72.00
Gary,Ind. C3 ..... 53.00
Johnstown,Pa. B2 ..... 53.00
Lackawanna,N.Y. B2.. 53.00
Munhall,Pa. C3 ..... 53.00
Sharon,Pa. S3 ..... 57.00
So.Chicago,Ill. C3 .... 53.00
So.Duquesne,Pa. C3 ... 53.00

Carbon, Forging (NT)

Bessemer,Pa. C3 ..... $63.00
Buffalo R2 ..... 63.00
Canton,O. R2 ..... 63.00
Clairton,Pa. C3 ..... 63.00
Cleveland R2 ..... 63.00
Conshohocken,Pa. A3.. 65.00
Detroit R7 ..... 63.00
Ensley,Ala. T2 ..... 63.00
Fairfield,Ala. T2 ..... 63.00
Fontana,Calif. K1 .... 85.00
Gary,Ind. C3 ..... 63.00
Geneva,Utah G1 ..... 63.00
Houston,Tex. S5 ..... 71.00
Ind.Harbor,Ind. I-2 .... 63.00
Johnstown,Pa. B2 .... 63.00
Lackawanna,N.Y. B2.. 63.00
Los Angeles B3 ..... 82.00
Munhall,Pa. C3 ..... 63.00
Seattle B3 ..... 82.00
So.Chicago C3,R2,W14. 63.00
So.Duquesne,Pa. C3 .. 63.00
So.SanFrancisco B3 ... 82.00
Warren,O. C17 ..... 63.00

Alloy (NT)

Bethlehem,Pa. B2 .... $66.00
Buffalo R2 ..... 66.00
Canton, O. R2, T7 .... 66.00
Conshohocken,Pa. A3.. 68.00
Detroit R7 ..... 66.00
Fontana,Calif. K1 .... 85.00
Gary,Ind. C3 ..... 66.00
Houston,Tex. S5 ..... 74.00
Ind.Harbor,Ind. Y1 .... 66.00
Johnstown,Pa. B2 .... 66.00
Lackawanna,N.Y. B2 .. 66.00
LosAngeles B3 ..... 86.00
Massillon,O. R2 ..... 66.00
Midland,Pa. C18 ..... 66.00
Munhall,Pa. C3 ..... 66.00
Sharon,Pa. S3 ..... 66.00
So.Chicago C3,R2,W14. 66.00
So.Duquesne,Pa. C3 .. 66.00
Warren,O. C17 ..... 66.00
Youngstown Y1 ..... 66.00

SHEETS BARS (NT)

Mansfield,O. E6 ..... $58.00
Sharon,Pa. S3 ..... 57.00

ROUNDS, SEAMLESS TUBE (NT)

Canton,O. R2 ..... $76.00
Cleveland R2 ..... 76.00
Ind.Harbor,Ind. I-2 .... 76.00
Massillon,O. R2 ..... 76.00
So.Chicago,Ill. R2 .... 76.00

SKELP

Aliquippa,Pa. J5 ..... 3.25
Munhall,Pa. C3 ..... 3.15
Warren,O. R2 ..... 3.15
Youngstown C3, R2 .... 3.15

WIRE RODS

AlabamaCity,Ala. R2 .. 3.85
Buffalo W12 ..... 3.85
Cleveland A7 ..... 3.85
Donora,Pa. A7 ..... 3.85
Fairfield,Ala. T2 ..... 3.85
Houston,Tex. S5 ..... 4.25
Ind.Harbor,Ind. Y1 .... 3.85
Johnstown,Pa. B2 ..... 3.85
Joliet,Ill. A7 ..... 3.85
LosAngeles B3 ..... 4.65
Minnequa,Colo. C10 .... 4.10
Monessen,Pa. P7 ..... 3.85
No.Tonawanda,N.Y. B11.4.10
Pittsburg,Calif. C11 .... 4.50
Portsmouth,O. P12 .... 3.85
Roebling,N.J. R5 ..... 3.95
So.Chicago,Ill. R2 .... 3.85
SparrowsPoint B2 .... 3.95
Sterling,Ill.(1) N15 .... 3.85
Struthers,O. Y1 ..... 3.85
Torrance,Calif. C11 .... 4.65

STRUCTURALS
Carbon Steel Stand. Shapes

Aliquippa,Pa. J5 ..... 3.40
Bessemer,Ala. T2 ..... 3.40
Bethlehem,Pa. B2 ..... 3.45
Clairton,Pa. C3 ..... 3.40
Fairfield,Ala. T2 ..... 3.40
Fontana,Calif. K1 .... 4.00
Gary,Ind. C3 ..... 3.40
Geneva,Utah G1 ..... 3.40
Houston, Tex. S5 ..... 3.80
Ind.Harbor,Ind. I-2 .... 3.40
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 ..... 4.00
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.00
Minnequa,Colo. C10 .... 3.75
Munhall,Pa. C3 ..... 3.40
Niles,Calif.(22) P1 .... 4.02
Phoenixville,Pa. P4 .... 3.30
Portland,Oreg. O4 ..... 3.90
Seattle B3 ..... 4.05
So.Chicago,Ill. C3, W14. 3.40
So.SanFrancisco B3 .... 3.95
Torrance,Calif. C11 .... 4.00
Weirton,W.Va. W6 ..... 3.40

Alloy Stand. Shapes

Clairton,Pa. C3 ..... 4.05
Fontana,Calif. K1 ..... 5.25
Munhall,Pa. C3 ..... 4.05
So.Chicago,Ill. C3 ..... 4.05

H.-S. Low-Alloy Stand. Shapes

Aliquippa,Pa. J5 ..... 5.15
Bessemer,Ala. T2 ..... 5.15
Bethlehem,Pa.(14) B2 .. 5.20
Clairton,Pa. C3 ..... 5.15
Fairfield,Ala T2 ..... 5.15
Fontana,Calif. K1 ..... 5.75
Gary,Ind. C3 ..... 5.15
Ind.Harbor,Ind. I-2, Y1. 5.15
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y.(14) B2 5.20
Munhall,Pa. C3 ..... 5.15
So.Chicago,Ill. C3 ..... 5.15
Struthers,O. Y1 ..... 5.15

Wide Flange

Bethlehem,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 .. 3.45
Munhall,Pa. C3 ..... 3.40
So.Chicago,Ill. C3 ..... 3.40

H.-S., L-A Wide Flange

Munhall,Pa. C3 ..... 5.10
So.Chicago,Ill. C3 ..... 5.10

SHEET STEEL PILING

Ind.Harbor,Ind. I-2 .... 4.20
Lackawanna,N.Y. B2 .. 4.20
Munhall,Pa. C3 ..... 4.20
So.Chicago,Ill. C3 .... 4.20
Weirton,W.Va. W6 .... 4.20

PLATES, Carbon Steel

AlabamaCity,Ala. R2 .. 3.50
Aliquippa,Pa. J5 ..... 3.50
Ashland,Ky.(15) A10 .. 3.50
Bessemer,Ala. T2 ..... 3.50
Clairton,Pa. C3 ..... 3.50
Claymont,Del. W16 .... 3.60
Cleveland J5, R2 ..... 3.50
Coatesville,Pa. L7 .... 3.60
Conshohocken,Pa. A3 .. 3.60
Ecorse,Mich. G5 ..... 3.75
Fairfield,Ala. T2 ..... 3.50
Fontana,Calif. K1 .... 4.10
Gary,Ind. C3 ..... 3.50
Geneva,Utah G1 ..... 3.50
Harrisburg,Pa. C5 .... 3.50
Houston,Tex. S5 ..... 3.90
Ind.Harbor,Ind. I-2, Y1. 3.50
Johnstown,Pa. B2 ..... 3.50
Lackawanna,N.Y. B2 .. 3.50
Minnequa,Colo. C10 .... 4.30
Munhall,Pa. C3 ..... 3.50
Pittsburgh J5 ..... 3.50
Seattle B3 ..... 4.40
Sharon,Pa. S3 ..... 3.50
So.Chicago,Ill. C3, W14. 3.50
SparrowsPoint,Md. B2.. 3.50
Steubenville,O. W10 .... 3.50
Warren,O. R2 ..... 3.50
Weirton,W.Va. W6 .... 3.50
Youngstown C3, R2, Y1. 3.50

PLATES (Universal Mill)

Fontana,Calif. K1 .... 4.40

PLATES, Carbon A.R.

Fontana,Calif. K1 .... 5.25

PLATES, Open-Hearth Alloy

Coatesville,Pa. L7 .... 4.50
Conshohocken,Pa. A3 .. 4.40
Fontana,Calif. K1 .... 5.40
Gary,Ind. C3 ..... 4.40
Johnstown,Pa. B2 .... 4.40
Munhall,Pa. C3 ..... 4.40
Sharon,Pa. S3 ..... 4.40
So.Chicago,Ill. C3 .... 4.40
SparrowsPoint,Md. B2 .. 4.40

PLATES, Wrought Iron

Economy,Pa. B14 ..... 7.85

PLATES,High-Strength Low-Alloy

Aliquippa,Pa. J5 ..... 5.35
Bessemer,Ala. T2 ..... 5.35
Clairton,Pa. C3 ..... 5.35
Cleveland J5, R2 ..... 5.35
Conshohocken,Pa. A3 .. 5.35
Ecorse,Mich. G5 ..... 5.60
Fairfield,Ala. T2 ..... 5.35
Fontana,Calif. K1 ..... 5.95
Gary,Ind. C3 ..... 5.35
Geneva,Utah G1 ..... 5.35
Houston,Tex. S5 ..... 5.60
Ind.Harbor,Ind. I-2, Y1. 5.35
Johnstown,Pa. B2 ..... 5.35
Munhall,Pa. C3 ..... 5.35
Pittsburgh J5 ..... 5.35
Sharon,Pa. S3 ..... 5.35
So.Chicago,Ill. C3 .... 5.35
SparrowsPoint,Md. B2 .. 5.35
Warren,O. R2 ..... 5.35
Youngstown Y1 ..... 5.35

FLOOR PLATES

Cleveland J5 ..... 4.55
Conshohocken,Pa. A3 .. 4.55
Harrisburg,Pa. C5 ..... 4.55
Ind.Harbor,Ind. I-2 .... 4.55
Munhall,Pa. C3 ..... 4.55
So.Chicago,Ill. C3 ..... 4.55

PLATES, Ingot Iron

Ashland,c.l.(15) A10 ... 3.75
Ashland,lcl(15) A10 ... 4.25
Cleveland,cl R2 ..... 4.10
Warren,O.cl R2 ..... 4.10

BARS, Hot-Rolled Carbon

AlabamaCity,Ala. R2 .. 3.45
Aliquippa,Pa. J5 ..... 3.45
Alton,Ill.(1) L1 ..... 3.45
Ashland,Ky.(17) A10 .. 3.45
Atlanta,Ga. A11 ..... 3.60
Bessemer,Ala. T2 ..... 3.45
Buffalo R2 ..... 3.45
Canton,O. R2 ..... 3.45
Clairton,Pa. C3 ..... 3.45
Cleveland R2 ..... 3.45
Ecorse,Mich. G5 ..... 3.65
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 .... 4.10
Gary,Ind. G3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2, Y1. 3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 .. 3.45
Los Angeles B3 ..... 4.15
Midland,Pa. C18 ..... 3.45
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 3.85
Niles,Calif. P1 ..... 4.17
N.Tonawanda,N.Y. B11 .3.45
Pittsburg,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
Seattle B3, N14 ..... 4.20
So.Chicago C3, R2, W14. 3.45
So.Duquesne,Pa. C3 .... 3.45
S.SanFran.,Cal. B3 .... 4.20
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Weirton,W.Va. W6 ..... 3.45
Youngstown C3, R2 .... 3.45

BAR SIZE ANGLES; S. SHAPES

Aliquippa,Pa. J5 ..... 3.45
Atlanta A11 ..... 3.60
Johnstown,Pa. B2 ..... 3.45
Lackawanna,N.Y. B2 .. 3.45
Niles,Calif. P1 ..... 4.17
Pittsburgh(23) J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SanFrancisco S7 ..... 4.00
Weirton,W.Va. W6 .... 3.45

BAR SIZE ANGLES; H.R.CARBON

Bethlehem,Pa. B2 ..... 3.65

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ..... 3.95
Buffalo R2 ..... 3.95
Canton,O. R2, T7 ..... 3.95
Clairton,Pa. C3 ..... 3.95
Ecorse,Mich. G5 ..... 4.25
Fontana,Calif. K1 .... 4.95
Gary,Ind. C3 ..... 3.95
Houston,Tex. S5 ..... 4.35
Ind.Harbor,Ind. I-2, Y1. 3.95
Johnstown,Pa. B2 ..... 3.95
KansasCity,Mo. S5 .... 4.55
Lackawanna,N.Y. B2 .. 3.95
Los Angeles B3 ..... 5.00
Massillon,O. R2 ..... 3.95
Midland,Pa. C18 ..... 3.95
So.Chicago C3, R2, W14. 3.95
So.Duquesne,Pa. C3 .... 3.95
Struthers,O. Y1 ..... 3.95
Warren,O. C17 ..... 3.95
Youngstown C3 ..... 3.95

BARS, Hot-Rolled Ingot Iron

Ashland,Ky.(17) A10 .. 3.70

BARS & SMALL SHAPES, H.R., High-Strength Low-Alloy

Aliquippa,Pa. J5 ..... 5.20
Bessemer,Ala. T2 ..... 5.20
Bethlehem,Pa. B2 ..... 5.20
Clairton,Pa. C3 ..... 5.20
Cleveland R2 ..... 5.20
Ecorse,Mich. G5 ..... 5.40
Fairfield,Ala. T2 ..... 5.20
Fontana,Calif. K1 .... 6.25
Gary,Ind. C3 ..... 5.20
Ind.Harbor,Ind. I-2, Y1. 5.20
Johnstown,Pa. B2 ..... 5.20
Lackawanna,N.Y. B2 .. 5.20
Pittsburgh J5 ..... 5.20
So.Duquesne,Pa. C3 .... 5.20
Struthers,O. Y1 ..... 5.20
Youngstown C3 ..... 5.20

BARS, Cold-Finished Carbon

Aliquippa,Pa. K5 ..... 4.15
Ambridge,Pa. W18 ..... 4.15
BeaverFalls,Pa. M12,R2. 4.15
Buffalo B5 ..... 4.15
Camden,N.J. P13 ..... 4.63
Carnegie,Pa. C12 ..... 4.15
Chicago W18 ..... 4.15
Cleveland A7, C20 ..... 4.15
Detroit P17 ..... 4.30
Donora,Pa. A7 ..... 4.15
Ecorse,Mich. G5 ..... 4.35
Elyria,O. W8 ..... 4.15
FranklinPark,Ill. N5 ... 4.15
Gary,Ind. R2 ..... 4.15
Hammond,Ind. L2, M13. 4.15
Hartford, Conn. R2 .... 4.55
Harvey,Ill. B5 ..... 4.15
LosAngeles R2 ..... 5.55
Mansfield,Mass. B5 .... 4.55
Massillon,O. R2, R8 .... 4.15
Midland,Pa. C18 ..... 4.15
Monaca,Pa. S17 ..... 4.15
Newark,N.J. W18 ..... 4.55
Plymouth,Mich. P5 .... 4.40
Pittsburgh J5 ..... 4.10
Putnam, Conn. W18 .... 4.55
Readville,Mass. C14 .... 4.55
St.Louis,Mo. M5 ..... 4.55
So.Chicago,Ill. W14 .... 4.15
SpringCity,Pa.(5) K3 .. 4.55
Struthers,O. Y1 ..... 4.15
Waukegan,Ill. A7 ..... 4.15
Youngstown F3, Y1 .... 4.15

BARS, Cold-Finished Alloy

Aliquippa,Pa. K5 ..... 4.90
Ambridge,Pa. W18 ..... 4.90
BeaverFalls,Pa. M12 ... 4.90
Bethlehem,Pa. B2 ..... 4.90
Buffalo B5 ..... 4.90
Canton,O. R2, T7 ..... 4.90
Carnegie,Pa. C12 ..... 4.90
Chicago W18 ..... 4.90
Cleveland A7, C20 ..... 4.90
Detroit P17 ..... 5.05
Donora,Pa. A7 ..... 4.90
Elyria,O. W8 ..... 4.90
Gary,Ind. R2 ..... 4.90
Hammond,Ind. L2, M13. 4.90
Hartford,Conn. R2 ..... 5.20
Harvey,Ill. B5 ..... 4.90
Lackawanna,N.Y. B2 .. 4.90
Mansfield,Mass. B5 .... 5.20
Massillon,O. R2, R8 .... 4.90
Midland,Pa. C18 ..... 4.90
Monaca,Pa. S17 ..... 4.90
Newark,N.J. W18 ..... 5.20
Plymouth,Mich. P5 .... 5.10
So.Chicago,Ill. R2, W14. 4.90
Struthers,O. Y1 ..... 4.90
Waukegan,Ill. A7 ..... 4.90
Warren,O. C17 ..... 4.90
Worcester,Mass. A7 .... 5.20
Youngstown F3, Y1 .... 4.90

RAH STEEL BARS

ChicagoHts. (3) C2, I-2 . 3.30
ChicagoHts. (4) C2, I-2 . 3.45
Franklin,Pa. (3) F5 ... 3.30
Franklin,Pa. (4) F5 ... 3.45
FortWorth,Tex.(26) T4 . 4.33
Huntngtn,W.Va.(3) W7 . 3.45
Moline,Ill.(3) R2 ..... 3.40
SouthAvis,Pa.(2) J8 ... 3.30
SouthAvis,Pa.(41) J8 .. 3.30
SouthAvis,Pa.(42) J8 .. 3.30
Williamsport(2,3) S19 .. 3.45

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 .9.50
Economy,Pa.(D.R.)B14 11.00
Economy,(Staybolt)B14 11.30
Dover,N.J.(Staybolt)U1 15.00
Dover(Eng. Bolt) U1 ..13.50
Dover(Wrgt.Iron) U1..12.25
McK.Rks.(S.R.) L5 .... 8.60
McK.Rks.(D.R.) L5 ...11.25
McK.Rks.(Staybolt) L5.12.75

BARS, Reinforcing

(Fabricated; to Consumers)
Huntington,W.Va. W7 ..4.50
Johnstown, ¼-1" B2 ...4.35
Los Angeles B3 ..... 5.00
Seattle B3, N14 ..... 5.10
SouthAvis,Pa. J8 ..... 4.35
So.SanFrancisco B3 .... 5.00
SparrowsPt., ¼-1" B2 .. 4.35
Williamsport,Pa. S19 .. 4.35

BARS, Reinforcing (Fabricators)

AlabamaCity,Ala. R2 .. 3.45
Alton,Ill.(6) L1 ..... 3.45
Atlanta,Ga. A11 ..... 3.60
Buffalo R2 ..... 3.45
Cleveland R2 ..... 3.45
Emeryville,Calif. J7 .... 4.20
Fairfield,Ala. T2 ..... 3.45
Fontana,Calif. K1 .... 4.10
Gary,Ind. C3 ..... 3.45
Houston,Tex. S5 ..... 3.85
Ind.Harbor,Ind. I-2,Y1.. 3.45
Johnstown,Pa. B2 ..... 3.45
KansasCity,Mo. S5 .... 4.05
Lackawanna,N.Y. B2 .. 3.45
LosAngeles B3 ..... 4.15
Milton,Pa. B6 ..... 3.45
Minnequa,Colo. C10 .... 4.25
Niles,Calif. P1 ..... 4.17
Pittsburg,Calif. C11 .... 4.15
Pittsburgh J5 ..... 3.45
Portland,Oreg. O4 ..... 4.20
SandSprings,Okla. S5 .. 4.35
Seattle,Wash. B3, N14.. 4.20
SouthAvis,Pa. J8 ..... 3.45
So.Chicago,Ill. R2 .... 3.45
So.Duquesne,Pa. C3 .... 3.45
So.SanFrancisco B3 .... 4.20
SparrowsPoint,Md. B2 .. 3.45
Struthers,O. Y1 ..... 3.45
Torrance,Calif. C11 .... 4.15
Youngstown C3, R2 .... 3.45

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. C3 ..... 4.20
Fontana,Calif. K1 ..... 4.95
Gary,Ind. C3 ..... 4.20
Youngstown C3 ..... 4.20

SHEETS, Hot-Rolled Steel (18 gage and heavier)

AlabamaCity,Ala. R2 .. 3.35
Ashland,Ky.(8) A10 ... 3.35
Butler,Pa. A10 ..... 3.35
Cleveland J5, R2 ..... 3.35
Conshohocken,Pa. A3 .. 3.45
Ecorse,Mich.(8) G5 .... 3.55
Fairfield,Ala. T2 ..... 3.35
Fontana,Calif. K1 ..... 4.25
Gary,Ind. C3 ..... 3.35
Ind.Harbor,Ind. I-2, Y1. 3.35
Irvin,Pa. C3 ..... 3.35
Lackawanna,N.Y. B2 .. 3.35
Munhall,Pa. C3 ..... 3.35
Niles,O. M4 ..... 3.75
Pittsburg,Calif. C11 .... 4.05
Pittsburgh J5 ..... 3.35
Sharon,Pa. S3 ..... 3.35
So.Chicago,Ill. W14 .... 3.35
SparrowsPoint,Md. B2 .. 3.35
Steubenville,O. W10 .... 3.35
Torrance,Calif. C11 .... 4.05
Warren,O. R2 ..... 3.35
Weirton,W.Va. W6 .... 3.35
Youngstown C3, Y1 .... 3.35

SHEETS, Hot-Rolled Carbon Steel (19 gage and lighter)

AlabamaCity,Ala. R2 .. 4.50
Dover,O. R1 ..... 4.65
Ind.Harbor,Ind. I-2 .... 4.40
Mansfield,O. E6 ..... 4.15
Niles,O. N12 ..... 4.10
Niles,O. M4 ..... 4.65
Torrance,Calif. C11 .... 5.15

SHEETS, H-R (14 ga., heavier) High-Strength Low-Alloy

Cleveland J5, R2 ..... 5.05
Conshohocken,Pa. A3 .. 5.05
Ecorse,Mich. G5 ..... 5.25
Fairfield,Ala. T2 ..... 5.05
Fontana,Calif. K1 .... 6.74
Gary,Ind. C3 ..... 5.05
Ind.Harbor,Ind. I-2, Y1. 5.05
Irvin,Pa. C3 ..... 5.05
Lackawanna(35) B2 .... 5.05
Pittsburgh J5 ..... 5.05
Sharon,Pa. S3 ..... 5.05
So.Chicago,Ill. C2 ..... 5.05
SparrowsPoint(36) B2 .. 5.05
Warren,O. R2 ..... 5.05
Weirton,W.Va. W6 .... 5.05
Youngstown, C3, Y1.... 5.05

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ..... 6.20
Ecorse,Mich. G5 ..... 6.40
Fontana,Calif. K1 ..... 7.05
Gary,Ind. C3 ..... 6.20
Ind.Harbor,Ind. I-2, Y1. 6.20
Irvin,Pa. C3 ..... 6.20
Lackawanna(37) B2 .... 6.20
Pittsburgh J5 ..... 6.20
Sharon,Pa. S3 ..... 6.20
SparrowsPoint(38) B2 .. 6.20
Warren,O. R2 ..... 6.20
Weirton,W.Va. W6 .... 6.20
Youngstown Y1 ..... 6.20

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SHEETS, Cold-Rolled Steel (Commercial Quality)

Butler,Pa. A10 .....4.10
Cleveland J5, R2 .....4.10
Ecorse,Mich. G5 .....4.30
Fairfield,Ala. T2 .....4.10
Follansbee,W.Va. F4 ..4.10
Fontana,Calif. K1 .....5.00
Gary,Ind. C3 .....4.10
GraniteCity,Ill. G4 .....4.30
Ind.Harbor,Ind. I-2, Y1.4.10
Irvin,Pa. C3 .....4.10
Lackawanna,N.Y. B2 ..4.10
Middletown,O. A10 .....4.10
Pittsburg,Calif. C11 ....5.05
Pittsburgh J5 .....4.10
SparrowsPoint,Md. B2..4.10
Steubenville,O. W10 ....4.10
Warren,O. R2 .....4.10
Weirton,W.Va. W6 ....4.10
Youngstown Y1 .....4.10

SHEETS, Gal'zd No. 10 Steel

AlabamaCity,Ala. R2 ..4.40
Ashland,Ky.(8) A10 ....4.40
Canton,O. R2 .....4.40
Delphos,O. N16 .....5.15
Dover,O. R1 .....4.75
Fairfield,Ala. T2 .....4.40
Gary,Ind. C3 .....4.40
GraniteCity,Ill. G4 .....4.60
Ind.Harbor,Ind. I-2 ....4.40
Irvin,Pa. C3 .....4.40
Kokomo,Ind. C16 .....4.50
MartinsFerry,O. W10 ..4.40
Niles,O. N12 .....4.65
Pittsburg,Calif. C11 ....5.15
SparrowsPoint,Md. B2 .4.40
Steubenville,O. W10 ....4.40
Torrance,Calif. C11 ....5.15
Weirton,W.Va. W6 ....4.40

SHEETS, Galvanized No. 10, High-Strength Low Alloy

Irvin,Pa. C3 .....6.75
SparrowsPoint(39) B2 ..6.75

SHEETS, Galvannealed Steel

Canton,O. R2 .....4.95
Irvin,Pa. C3 .....4.95
Kokomo,Ind. C16 .....5.05
Niles,O. N12 .....5.20

SHEETS, ZINCGRIP Steel No. 10

Butler,Pa. A10 .....4.65
Middletown,O. A10 ....4.65

SHEETS, Electro Galvanized

Cleveland R2 (28) 5.25
Niles,O. R2 (28) 5.25
Weirton,W.Va. W6 .....5.10

SHEETS, Zinc Alloy

Ind.Harbor,Ind. I-2 ....5.05

SHEETS, Long Terne, Steel (Commercial Quality)

BeechBottom,W.Va. W10 4.80
Gary,Ind. C3 .....4.80
Mansfield,O. E6 .....4.80
Middletown,O. A10 ....4.80
Niles,O. N12 .....4.80
Weirton,W.Va. W6 ....4.80

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....5.20

ROOFING SHORT TERNES (Package; 8 lb coated)

Gary,Ind. C3 .....$17.50
Yorkville, O. W10 ....17.50

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2 .....$6.60
Gary,Ind. C3 .....6.50
Ind.Harbor I-2 .....6.50
Irvin,Pa. C3 .....6.50
Yorkville,O. W10 .....6.50

SHEETS, Lt. Coated Ternes, 6 lb

Yorkville, O. W10.....$7.05

SHEETS, Mfg. Ternes, 8 lb

Gary,Ind. C3 .....$8.10
Warren,O. R2 .....8.10
Yorkville,O. W10 .....8.10

SHEETS, Coated Ternes, 12 lb

Yorkville,O. W10 .....8.95

SHEETS, Culvert, No. 16 Corrugated Ingot Iron	Cu Alloy	Cu Fe
Ashland A10 ...	5.20	...
Canton,O. R2 ...	5.25	5.70
Fairfield,Ala. T2.	5.20	5.45
Gary C3	5.20	5.45
IndianaHarbor I-2	5.20	5.45
Irvin,Pa. C3	5.20	5.45
Kokomo C16	5.40	...
MartinsFy,O. W10	5.20	5.45
Pittsburg,Cal. C11	5.95	...
SparrowsPt. B2 .	5.20	...
Torrance,Cal. C11	5.95	...

SHEETS, Culvert, No. 16 Corrugated Ingot Iron

Ashland,Ky. A10 .....5.45

SHEETS, Hot-Rolled Ingot Iron 18 Gage and Heavier

Ashland,Ky.(8) A10 ...3.60
Cleveland R2 .....3.95
Ind.Harbor,Ind. I-2 ....3.60
Warren,O. R2 .....3.95

SHEETS, Cold-Rolled Ingot Iron

Cleveland R2 .....4.70
Middletown,O. A10 ....4.60
Warren,O. R2 .....4.70

SHEETS, Galvanized Ingot Iron No. 10 Flat

Ashland,Ky (8) A10....4.65
Canton,O. R2 .....5.15
Ind.Harbor,Ind. I-2 ....4.80

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....4.90
Middletown,O. A10 ....4.90

SHEETS, Well Casing

Torrance,Calif. C11 ....4.85

SHEETS, Drum Body

Pittsburg,Calif. C11 ....4.05
Torrance,Calif. C11 ....4.05

SHEETS, Aluminized

Butler,Pa. A10 .....7.75

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$6.35	$6.60	$6.85
Fairfield,Ala. T2	6.45	6.70	6.95
Gary,Ind. C3	6.35	6.60	6.85
GraniteCity,Ill. G4	6.55	6.80	7.05
Ind.Harbor,Ind. I-2, Y1	6.35	6.60	6.85
Irvin,Pa. C3	6.35	6.60	6.85
Niles,O. R2	6.35	6.60	6.85
Pittsburg,Calif. C11	7.10	7.35	7.60
SparrowsPoint,Md. B2	6.45	6.70	6.95
Weirton,W.Va. W6	6.35	6.60	6.85
Yorkville,O. W10	6.35	6.60	6.85

SHEETS, SILICON, H.R. or C.R. (22 Ga.) COILS (Cut Lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	6.70	7.95	8.75
Brackenridge,Pa. A4	...	...	7.20	8.45	9.25
GraniteCity,Ill. G4(cut lengths)	...	...	6.90	8.15	...
Ind.Harbor,Ind. I-2	6.40	6.70	(34)	...	...
Mansfield,O. E6 (cut lengths).	5.90	6.20	6.70	7.95	8.75
Niles,O. N12 (cut lengths)	...	6.20	6.70	...	...
Niles,O. M4 (24 Gage)	5.65	5.95	6.45	...	...
Parkersburg F4 (cut lengths).	...	...	6.70	7.95	8.75
Vandergrift,Pa. C3	...	6.70	7.20	8.45	9.25
Warren,O. R2	6.40	6.70	7.20	8.45	9.25
Zanesville,O. A10	...	6.70	7.20	8.45	9.25

SHEETS, SILICON (22 Gage Base) Coils (Cut Lengths ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	9.30	9.85	10.55	11.35
Brackenridge,Pa. A4	9.80	10.35	11.05	....
Parkersburg F4 (cut lengths).	9.30	....	....	....
Vandergrift,Pa. C3	9.80	10.35	11.05	11.85
Warren,O. R2	9.80	....	....	....
Zanesville,O. A10	9.80	10.35	11.05	11.85

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Vandergrift,Pa. C3	12.35	13.20	14.20	14.70

TIN PLATE, American COKE (Base Box)	1.25 lb	1.50 lb
Aliquippa J5	$7.30	$7.50
Fairfield,Ala. T2.	7.40	7.60
Gary C3	7.30	7.50
Gran.City,Ill. G4.	7.50	7.70
Ind.Harbor I-1, Y1	7.30	7.50
Irvin,Pa. C3	7.30	7.50
Pitts.Cal. C11 ..	8.05	8.25
Sp.Pt.,Md. B2	7.40	7.60
Warren R2	7.30	7.50
Weirton W6	7.30	7.50
Yorkville,O. W10.	7.30	7.50

CANMAKING BLACK PLATE (Base Box)

Aliquippa,Pa. J5 .....$5.60
Fairfield,Ala. T2 .....5.70
Gary,Ind. C3 .....5.60
GraniteCity,Ill. G4 .....5.80
Ind.Harbor,Ind. I-2, Y1.5.60
Irvin,Pa. C3 .....5.60
Niles,O. R2 .....5.60
Pittsburg,Calif. C11 ...6.35
SparrowsPoint,Md. B2 .5.70
Warren,O. R2 .....5.60
Weirton,W.Va. W6 ....5.60
Yorkville, O. W10 .....5.60

HOLLOWARE ENAMELING Black Plate (29 gage)

Aliquippa,Pa. J5 .....5.30
Follansbee,W.Va. F4 ..5.30
Gary,Ind. C3 .....5.30
GraniteCity,Ill. G4 .....5.50
Ind.Harbor,Ind. Y1 ....5.30
Irvin,Pa. C3 .....5.30
Niles,O. R2 .....5.30
SparrowsPoint,Md. B2..5.40
Warren,O. R2 .....5.30
Yorkville,O. W10 .....5.30

SHEETS, Enam'lg. Iron

Ashland,Ky.(8) A10 ...4.40
Cleveland R2 .....4.40
Ecorse,Mich. G5 .....4.70
Gary,Ind. C3 .....4.40
GraniteCity,Ill. G4 .....4.60
Ind.Harbor,Ind. I-2 ....4.40
Irvin,Pa. C3 .....4.40
Middletown,O. A10 ....4.40
Niles,O. M4 .....4.90
Youngstown Y1 .....4.40

STRIP, Hot-Rolled, High-Strength Low-Alloy

Bessemer,Ala. T2 .....4.95
Conshohocken,Pa. A3 ..4.95
Ecorse,Mich. G5 .....5.15
Fairfield,Ala. T2 .....4.95
Fontana,Cal. K1 .....6.64
Gary,Ind C3 .....4.95
Ind.Harb.,Ind. I-2, Y1..4.95
Lackawanna,N.Y. B2 ..4.95
Sharon,Pa. S3 .....4.95
SparrowsPoint,Md. B2..4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 ....4.95
Youngstown C3, Y1 ...4.95

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10) S15.5.10
Carnegie,Pa. S18 .....5.10
Fontana,Calif. K1 .....6.30
Gary,Ind. C3 .....5.10
Houston,Tex. S5 .....5.50
KansasCity,Mo. S5 ....5.70
NewBritn,Conn.(10) S15.5.10
Sharon, Pa.S3 .....5.10
Youngstown C3 .....5.10

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...3.50
Warren,O. R2 .....3.85

STRIP, Hot-Rolled Carbon

Alton,Ill.(1) L1 .....3.25
Ashland,Ky.(8) A10 ...3.25
Atlanta A11 .....3.40
Bessemer,Ala. T2 .....3.25
Bridgeprt,Conn.(10) S15.3.25
Butler,Pa. A10 .....3.25
Carnegie,Pa. S18 .....3.25
Conshohocken,Pa. A3 ..3.35
Detroit M1 .....3.45
Ecorse,Mich. G5 .....3.45
Fairfield,Ala. T2 .....3.25
Fontana,Calif. K1 .....4.40
Gary,Ind. C3 .....3.25
Houston,Tex. S5 .....3.65
Ind.Harbor,Ind. I-2, Y1.3.25
KansasCity,Mo.(9) S5 ..3.85
Lackawanna,N.Y. B2 ..3.25
LosAngeles B3 .....4.00
Milton,Pa. B6 .....3.25
Minnequa,Colo. C10 ....4.30
NewBritain(10) S15 ...3.25
N.Tonawanda,N.Y. B11.3.25
Pittsburg,Calif. C11 ....4.00
Riverdale,Ill. A1 .....3.25
SanFrancisco S7 .....4.00
Seattle B3, N14 .....4.25
Sharon,Pa. S3 .....3.25
So.Chicago,Ill. W14 ....3.25
So.SanFrancisco B3 ...4.00
SparrowsPoint,Md. B2 ..3.25
Torrance,Calif. C11 ....4.00
Warren,O. R2 .....3.25
Weirton,W.Va. W6 ....3.25
WestLeechburg,Pa. A4..3.25
Youngstown C3, Y1 ....3.25

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10) S15.9.50
Carnegie,Pa. S18 .....9.50
Cleveland A7 .....9.50
Dover,O. G6 .....9.50
Harrison,N.J. C18 .....9.50
NewBritn,Conn.(10) S15.9.50
Pawtucket,R.I.(11) N8..9.50
Pawtucket,R.I.(12) N8..9.80
Sharon,Pa. S3 .....9.50
Worcester,Mass. A7 ...9.80
Youngstown C8 .....9.50

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....4.75

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bridgeport,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
Bristol,Conn. W1	...	...	6.85	8.80	....
Carnegie,Pa. S18	...	5.95	6.55	8.50	10.80
Cleveland A7	4.15	5.95	6.55	8.50	10.80
Dover,O. G6	4.15	5.95	6.55	8.50	10.80
FranklinPark,Ill. T6 ..	4.40	6.10	6.70	8.65	....
Harrison,N.J. C18	...	...	6.85	8.80	11.10
Mattapan,Mass. T6	4.65	6.25	6.85	8.80	11.10
NewBritn.,Conn.(10) S15	4.15	5.95	6.55	8.50	10.80
NewCastle,Pa. B4	4.15	5.95	6.55	8.50	....
NewCastle,Pa. E5	4.15	5.95	6.55	8.50	10.80
NewYork W3	...	6.30	6.90	8.85	11.15
Pawtucket, R. I. N8:					
Cleve.orPitts.Base ...	4.70	5.95	6.55	8.50	10.80
Worcester,Base	4.65	6.25	6.85	8.80	11.10
Sharon,Pa. S3	4.15	5.95	6.55	8.50	10.80
Trenton,N.J. R5	...	6.25	6.85	8.80	11.10
Wallingford,Conn. W2..	4.65	6.25	6.85	8.80	11.10
Weirton,W.Va. W6	4.15	5.95	6.55	8.50	10.80
Worcester,Mass. A7 ...	4.45	6.25	6.85	8.80	11.10
Worcester,Mass. T6	4.65	6.25	6.85	8.80	11.10
Youngstown C8	4.50	5.95	6.55	8.50	10.80
Spring Steel (Tempered)					
Trenton,N.J. R5	...	...	9.30	11.25	13.55
Harrison,N.J. C18	...	...	9.30	11.25	13.55

STRIP, Cold-Rolled Carbon

Anderson,Ind.(40) G6 ..4.15
Berea,O. C7 .....6.60
Bridgprt,Conn.(10) S15.4.15
Butler,Pa. A10 .....4.15
Cleveland A7, J5 .....4.15
Dearborn,Mich. D3 ....4.40
Detroit, D2 .....4.40
Detroit M1 .....4.35
Dover,O.(40) G6 .....4.15
Ecorse,Mich. G5 .....4.35
Follansbee,W.Va. F4 ...4.15
Fontana,Calif. K1 .....5.40
FranklinPark,Ill. T6 ..4.30
Ind.Harbor,Ind. I-2 ....4.30
Lackawanna,N.Y. B2 ..4.15
LosAngeles C1 .....5.50
Mattapan,Mass.(21) T6.4.65
Middletown,O. A10 ....4.15
NewBritain(10) S15 ...4.15
NewCastle,Pa. B4 .....4.15
NewCastle,Pa.(40) E5 ..4.15
NewHaven,Conn. A7, D2.4.65
NewYork W3 .....5.00
Pawtucket,R.I.(21) N8..4.65
Riverdale,Ill. A1 .....4.30
Rome,N.Y. R6 .....4.15
Sharon,Pa. S3 .....4.15
SparrowsPoint,Md. B2 ..4.15
Trenton,N.J.(13) R5 ...4.65
Wallingford,Conn. W2 ..4.65
Warren,O.(40) T5 .....4.15
Warren,O. R2 .....4.15
Weirton,W.Va. W6 ....4.15
Youngstown C8, Y1 ....4.15

STRIP, Cold-Rolled, High-Strength Low-Alloy

Cleveland A7, J5.....6.20
Dover,O. G6 .....6.20
Ecorse,Mich. G5 .....6.40
Fontana,Calif. K1 .....6.95
Lackawanna,N.Y., B2 ..6.40
Sharon,Pa. S3 .....6.20
SparrowsPoint,Md. B2..6.40
Warren,O. R2 .....6.20
Weirton,W. Va. W6.....6.20
Youngstown Y1 .....6.20

STRIP, Electro Galvanized

Weirton,W.Va. W6 ....4.15
Youngstown C8 .....4.15

Key to Producing Companies

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Tube
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B14 A. M. Byers Co.
C1 Calif. Cold Rolled Steel
C2 Calumet Steel Div., Borg-Warner Corp.
C3 Carnegie-Illinois Steel
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cld.Roll.Mills Co.
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia Steel Co.
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Son, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Steel
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
G1 Geneva Steel Co.
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
H4 Heppenstall Co.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K5 Kidd Drawn Steel Co.
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Electric Steel
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

TIGHT COOPERAGE HOOP

Atlanta A11	3.60
Riverdale,Ill. A1	3.60
Sharon,Pa. S3	3.60
Youngstown C3	3.60

WIRE, MB Spring, High-Carbon

Aliquippa,Pa. J5	5.90
Alton,Ill.(1) L1	5.90
Bartonville,Ill.(1) K4	5.90
Buffalo W12	5.90
Cleveland A7	5.90
Donora,Pa. A7	5.90
Duluth A7	5.90
Fostoria,O. S1	5.90
Johnstown,Pa. B2	5.90
LosAngeles B3	6.85
Milbury,Mass(12) N6	6.20
Monessen,Pa. P7, P16	5.90
Palmer,Mass. W12	6.20
Pittsburg,Calif. C11	6.85
Portsmouth,O. P12	5.90
Roebling,N.J. R5	6.20
So.Chicago,Ill. R2	5.90
SparrowsPoint,Md. B2	6.00
Struthers,O. Y1	5.90
Trenton,N.J., A7	6.20
Waukegan,Ill. A7	5.90
Worcester A7,J4,T6,W12	6.20

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	5.35
Buffalo W12	5.35
Cleveland A7	5.35
Crawfordsville,Ind. M8	5.35
Dover,O. G6	5.35
Fostoria,O. S1	5.50
Kokomo,Ind. C16	5.35
FranklinPark,Ill. T6	5.70
Massillon,O. R8	5.35
Monessen,Pa. P7, P16	5.35
Pawtucket,R.I.(12) N8	5.65
Trenton,N.J. R5	5.65
Worcester A7, T6, W12	5.65

WIRE, Fine and Weaving (8-in. Coils)

Bartonville,Ill.(1) K4	8.45
Buffalo W12	8.45
Chicago W13	8.45
Cleveland A7	8.45
Crawfordsville,Ind. M8	8.45
Fostoria,O. S1	8.45
Johnstown,Pa. B2	8.45
Kokomo,Ind. C16	8.45
Monessen,Pa. P16	8.45
Palmer,Mass. W12	8.75
Portsmouth,O. P12	8.45
Roebling,N.J. R5	8.75
Waukegan,Ill. A7	8.45
Worcester,Mass. A7, T6	8.75

WIRE, Tire Bead

Monessen,Pa. P16	10.80
Roebling,N.J. R5	10.80

WIRE, Manufacturers Bright, Low-Carbon

AlabamaCity,Ala. R2	4.50
Aliquippa,Pa. J5	4.50
Atlanta A11	4.60
Alton,Ill.(1) L1	4.50
Bartonville,Ill.(1) K4	4.50
Buffalo W12	4.50
Chicago W13	4.50
Cleveland A7, C20	4.50
Crawfordsville,Ind, M8	4.60
Donora,Pa. A7	4.50
Duluth A7	4.50
Fairfield,Ala. T2	4.50
Fostoria,O.(24) S1	4.85
Houston S5	4.90
Johnstown,Pa. B2	4.50
Joliet,Ill. A7	4.50
KansasCity,Mo. S5	5.10
Kokomo,Ind. C16	4.60
LosAngeles B3	5.45
Minnequa,Colo. C10	4.75
Monessen,Pa. P7	4.50
Newark,6-8ga. I-1	5.15
No.Tonawanda B11	4.90
Palmer,Mass. W12	4.80
Pittsburg,Calif. C11	5.45
Portsmouth,O. P12	4.50
Rankin,Pa. A7	4.50
So.Chicago,Ill. R2	4.50
So.SanFrancisco C10	5.45
SparrowsPoint,Md. B2	4.60
Sterling,Ill.(1) N15	4.50
Struthers,O. Y1	4.50
Torrance,Calif. C11	5.45
Waukegan,Ill. A7	4.50
Worcester,Mass. A7, T6	4.80

WIRE, Upholstery Spring

Aliquippa,Pa. J5	5.55
Alton,Ill.(1) L1	5.55
Buffalo W12	5.55
Cleveland A7	5.55
Donora,Pa. A7	5.55
Duluth A7	5.55
Johnstown,Pa. B2	5.55
LosAngeles B3	6.50
Monessen,Pa. P7, P16	5.55
NewHaven,Conn. A7	5.85
Palmer,Mass. W12	5.85
Pittsburg,Calif. C11	6.50
Portsmouth,O. P12	5.55
Roebling,N.J. R5	5.85
So.Chicago,Ill. R2	5.55
SparrowsPoint,Md. B2	5.65
Struthers,O. Y1	5.55
Torrance,Calif. C11	6.50
Trenton,N.J. A7	5.85
Waukegan,Ill. A7	5.55
Worcester,Mass. A7	5.85

WIRE, Galv'd ACSR for Cores

Monessen,Pa. P16	8.15
Roebling,N.J. R5	8.45
SparrowsPoint,Md. B2	8.25

WIRE Merchant Quality (6 to 8 gage)

	An'ld	Galv.
AlabamaCity R2	5.35	5.60
Aliquippa J5	5.35	5.60
Atlanta A11	5.45	5.70
Bartonville(19) K4	5.35	5.60
Buffalo(31) W12	4.50	...
Cleveland A7	5.35	5.60
Crawfordsvil. M8	5.45	5.70
Donora A7	5.35	5.60
Duluth A7	5.35	5.60
Fairfield T2	5.35	5.60
Houston,Tex. S5	5.75	6.00
Johnstown B2	5.35	5.60
Joliet,Ill A7	5.35	5.60
KansasCy,Mo. S5	5.95	6.20
Kokomo C16	5.45	5.70
LosAngeles B3	6.30	...
Minnequa C10	5.60	5.85
Monessen P7	5.35	5.60
Palmer(31) W12	4.80	...
Pitts.,Cal. C11	6.30	6.55
Prtsmth.(18) P12	5.35	5.60
Rankin A7	5.35	5.60
So.Chicago R2	5.35	5.60
So.S.Fran. C10	6.30	6.55
SparrowsPt. B2	5.45	5.70
Sterling,Ill.(1)N15	5.35	5.60
Struthers,O. Y1	5.35	5.60
Torrance,Cal. C11	6.30	...
Worcester A7	5.65	5.90

WIRE (16 gage)

	An'ld Stone	Galv. Stone
Aliquippa J5	9.80	11.30
Bartonville(1) K4	9.80	11.30
Cleveland A7	9.80	11.30
Crawfrdvil. M8	9.80	11.30
Fostoria,O. S1	9.90	11.40
Johnstown B2	9.80	11.30
Kokomo C16	9.80	11.30
Minnequa C10	9.40	10.90
Palmer,Mass. W12	9.80	11.30
Pitts.,Cal. C11	10.15	11.65
Prtsmth.(18) P12	9.80	11.30
SparrowsPt. B2	9.90	11.40
Waukegan A7	9.80	11.30

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	128
Crawfordsville M8	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Houston,Tex. S5	134
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
KansasCity,Mo. S5	138
Kokomo,Ind. C16	128
Minnequa,Colo. C10	131
Monessen,Pa. P7	126
Pittsburg,Calif. C11	146
Portsmouth,O.(18) P12	126
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
So.SanFran.,Calif. C10	146
SparrowsPoint,Md. B2	128
Sterling,Ill.(1) N15	126

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2	116
Duluth A7	116
Franklin,Pa. F5	116
Huntington,W.Va. W7	116
Johnstown,Pa. B2	116
Joliet,Ill. A7	116
Minnequa,Colo. C10	121
Moline,Ill. R2	112
So.Chicago R2	116
Williamsport,Pa. S19	120

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	116
Ala.City,Ala.,17-18ga.R2	198
Aliquippa,Pa.9-14½ga.J5	116
Atlanta A11	118
Bartonville,Ill.(19) K4	116
Crawfordsville,Ind. M8	118
Donora,Pa. A7	116
Duluth A7	116
Houston,Tex. S5	124
Fairfield,Ala. T2	116
Johnstown,Pa. B2	116
Johnstn,17ga.6" B2	190
Johnstn,17ga.,4" B2	193
Joliet,Ill. A7	116
KansasCity,Mo. S5	128
Kokomo,Ind. C16	118
Minnequa,Colo. C10	121
Monessen,Pa. P7	116
Pittsburg,Calif. C11	139
Portsmouth,O.(18) P12	116
Rankin,Pa. A7	116
So.Chicago,Ill. R2	116

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	113
Atlanta A11	114
Bartonville,Ill.(19) K4	113
Chicago W13	113
Crawfordsville M8	115
Donora,Pa. A7	113
Duluth A7	113
Fairfield,Ala. T2	113
Joliet,Ill. A7	113
KansasCity,Mo. S5	125
Kokomo,Ind. C16	115
Minnequa,Colo. C10	118
Pittsburg,Calif. C11	137
Portsmouth,O.(18) P12	113
So.Chicago,Ill. R2	113
So.SanFran.,Calif. C10	137
SparrowsPoint,Md. B2	115
Sterling,Ill.(1) N15	113

NAILS & STAPLES, Stock

To Dealers & Mfrs. (7)	Col.
AlabamaCity,Ala. R2	106
Aliquippa,Pa. J5	106
Atlanta A11	108
Bartonville,Ill.(19) K4	106
Chicago,Ill. W13	106
Cleveland A9	112
Crawfordsville,Ind. M8	108
Donora,Pa. A7	106
Duluth A7	106
Fairfield,Ala. T2	106
Galveston,Tex. D7	114
Houston,Tex. S5	114
Johnstown,Pa. B2	106
Joliet,Ill. A7	106
KansasCity,Mo. S5	118
Kokomo,Ind. C16	108
Minnequa,Colo. C10	111
Monessen,Pa. P7	106
Pittsburg,Calif. C11	125
Portsmouth,O. P12	106
Rankin,Pa. A7	106
So.Chicago,Ill. R2	106
SparrowsPoint,Md. B2	108

NAILS & STAPLES, Non-Stock

AlabamaCity,Ala. R2	5.35
Bartonville,Ill.(19) K4	5.35
Crawfordsville,Ind. M8	5.45
Donora,Pa. A7	5.35
Duluth A7	5.35
Johnstown,Pa. B2	5.35
Joliet,Ill. A7	5.35
Kokomo,Ind. C16	5.45
Minnequa,Colo. C10	5.60
Pittsburg,Calif. C11	6.30
Portsmouth,O. P12	5.35
Rankin,Pa. A7	5.35
So.Chicago,Ill. R2	5.35
SparrowsPoint,Md. B2	5.45
Worcester,Mass. A7	5.65

NAILS, Cut (100 lb keg) To dealers (33)

Conshohocken,Pa. A3	$6.75
Wheeling,W.Va. W10	6.75

AXLES

Fairfield,Ala. T2	5.25
Gary,Ind. C3	5.25
Ind.Harbor,Ind. S13	5.25
Johnstown,Pa. B2	5.25
McKeesRocks,Pa. C3	5.25

TIE PLATES

Fairfield,Ala. T2	4.20
Gary,Ind. C3	4.20
Ind.Harbor,Ind. I-2	4.20
Lackawanna,N.Y. B2	4.20
Minnequa,Colo. C10	4.20
Pittsburg,Calif. C11	4.35
Pittsburgh R2	4.20
Seattle B3	4.35
Steelton,Pa. B2	4.20
Torrance,Calif. C11	4.35
Weirton,W.Va. W6	4.20

JOINT BARS

Bessemer,Pa. C3	4.40
Fairfield,Ala. T2	4.40
Ind.Harbor,Ind. I-2	4.40
Joliet,Ill. C3	4.40
Lackawanna,N.Y. B2	4.40
Minnequa,Colo. C10	4.40
Steelton,Pa. B2	4.40

TRACK BOLTS (20) Treated

Fairfield,Ala. T2	9.10
KansasCity,Mo. S5	9.10
Lebanon,Pa.(32) B2	8.85
Minnequa,Colo. C10	8.85
Pittsburgh O3, P14	9.10
Seattle B3	9.35

STANDARD TRACK SPIKES

Fairfield,Ala. T2	5.60
Ind.Harbor,Ind. I-2, Y1	5.60
KansasCity,Mo. S5	5.85
Lebanon,Pa. B2	5.60
Minnequa,Colo, C10	5.60
Pittsburgh J5	5.60
Seattle B3	6.10
So.Chicago,Ill. R2	5.60
Struthers,O. Y1	5.60
Youngstown R2	5.60

ROPE WIRE

	Mild Plow	Plow	Imp. Plow
Bartonville,Ill. K4	8.05	8.05	8.30
Buffalo W12	8.05	8.05	8.30
Cleveland A7	8.05	8.05	8.30
Donora,Pa. A7	8.05	8.05	8.30
Fostoria,O. S1	8.05	8.05	8.30
Johnstown,Pa. B2	8.05	8.05	8.30
Monessen,Pa. P7, P16	8.05	8.05	8.30
NewHaven,Conn. A7	8.35	8.35	8.60
Palmer,Mass. W12	8.35	8.35	8.60
Portsmouth,O. P12	8.05	8.05	8.30
Roebling,N.J. R5	8.35	8.35	8.60
SparrowsPoint,Md. B2	8.15	8.15	8.40
Struthers,O. Y1	8.05	8.05	8.30
Trenton,N.J. A7	8.35	8.35	8.60
Waukegan,Ill. A7	8.05	8.05	8.30
Williamsport,Pa. B2	8.15	8.15	8.40
Worcester,Mass. J4, T6	8.35	8.35	8.60

RAILS

	Std. No. 1	Std. No. 2	Std. All No. 2	TeeRails 60 lb Under
Bessemer,Pa. C3	3.40	3.30	3.35	3.75
Ensley,Ala. T2	3.40	3.30	...	3.75
Fairfield,Ala. T2	...	...	...	3.75
Gary,Ind. C3	3.40	3.30	3.35	...
Huntington,W.Va. W7	...	...	...	3.75
Ind.Harbor,Ind. I-2	3.40	3.30	3.35	...
Johnstown,Pa. B2	...	...	...(16)	3.75
Lackawanna B2	3.40	3.30	...	3.75
Minnequa,Colo. C10	3.40	3.30	...	4.25
Steelton,Pa. B2	3.40	3.30	...	...
Williamsport,Pa. S19	...	...	...	3.75

Key to Producing Companies

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M9 Midvale Co.
M10 Missouri-Illinois Furnace
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M14 McInnes Steel Co.

N2 National Supply Co.
N3 National Tube Co.
N5 Nelsen Steel & Wire Co.
N6 New Eng.HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Co.
N14 Nrthwst. Steel Roll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron&Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke&Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Steel Div. Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div.,EatonMfg.
S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.&I. Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
T2 Tenn. Coal, Iron & R.R.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
U1 Ulster Iron Works
U4 Universal Cyclops Steel
V2 Vanadium Alloys Steel
V3 Vulcan Crucible Steel Co.
W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 Wstrn.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W16 Worth Steel Co.
W18 Wyckoff Steel Co.
Y1 Youngstwn Sheet & Tube

TOOL STEEL

Grade	Cents per lb	Grade	Cents per lb
Reg. Carbon	21.00	18W,4Cr,3V	126.00
Extra Carbon	24.50	18W,4Cr,2V,9Co	185.50
Spec. Carbon	29.50	18W,4Cr,2V,6Co	169.50
Oil Hardening	32.00	18.25W,4.25Cr,1V,4.75Co	156.50
Cr Hot Wrk.	32.00	20.25W,4.25Cr,1.6V,12.25Co	293.50
Hi-Carbon-Cr	57.50	1.5W,4Cr,1V,8.5Mo	71.50
18W,4Cr,1V	100.00	6.4W,4.5Cr,1.9V,5Mo.	76.50
18W,4Cr,2V	113.00	6W,4Cr,3V,6Mo	97.00

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, H4, J3, L3, M9, M14, R2, S8, T7, U4, V2, V3.

(1) Chicago Base. (2) Angles. (3) Merchant. (4) Reinforcing. (5) Philadelphia del. (6) Chicago or Birm. Base. (7) To jobbers, 3 cols. lower. (8) 16 gage and heavier. (9) 6 in. and narrower. (10) Pittsburgh Base. (11) Cleveland & Pittsburgh Base. (12) Worcester, Mass. Base. (13) 3" & wider; over ½" to under 3" 5.15c. (14) Also wide flange beams. (15) ½" and thinner. (16) 40 lb and under. (17) Flats only. (18) To dealers. (19) Chicago & Pittsburgh Base. (20) Deduct 0.25c for untreated. (21) New Haven, Conn. Base. (22) Del. San Fran. Bay area. (23) Angles 1"x1" to 1¼"x1¼" only. (24) Deduct 0.35c for finer than 15 Ga. (26) Reinforcing, mill shipments; to consumers, 4.83c; fabricated to fabricators, 4.58c. (28) Bonderized. (31) Not annealed. (32) Untreated. (33) To jobbers, deduct 20 cents. (34) 6.70c for cut lengths. (35) 72" and narrower. (36) 54" and narrower. (37) 15 Ga. & lighter; 60" & narrower. (38) 14 Ga. & lighter; 48" & narrower. (39) 48" and narrower. (40) Lighter than 0.035"; 4.40c, 0.035" and heavier. (41) Flats. (42) Bands.

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STANDARD PIPE, T. & C.

BUTTWELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Black A	Black B	Black C	Galvanized D	Galvanized E	Galvanized F
⅜	5.5c	0.24	36.5	34.5	35.5	8.5	9.0	7.5
¼	6.0	0.42	33.5	31.5	32.5	9.5	11.0	8.5
⅜	6.0	0.57	29.0	27.0	28.0	5.5	8.0	4.5
½	8.5	0.85	40.5	38.5	39.5	24.0	22.0	23.0
¾	11.5	1.13	43.5	41.5	42.5	28.0	26.0	27.0
1	17.0	1.68	46.0	44.0	45.0	31.0	29.0	30.0
1¼	23.0	2.28	46.5	44.5	45.5	31.5	29.5	30.5
1½	27.5	2.73	47.0	45.0	46.0	32.0	30.0	31.0
2	37.0	3.68	47.5	45.5	46.5	32.5	30.5	31.5
2½	58.5	5.82	48.0	46.0	47.0	33.0	31.0	32.0
3	76.5	7.62	48.0	46.0	47.0	33.0	31.0	32.0

Column A: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa. ⅛-⅜", F6; Benwood, W. Va., 1½ percentage points lower on ⅛", 2 points lower on ¼", 3 points lower on ⅜", W10. Wheatland, Pa., 2 pts lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, O. N3; Youngstown, plus 42% on 3½" and 4", R2; Youngstown Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 31% on 3½" and 4".

Columns B & E: Sparrows Point Md. B2.

Columns C & F: Indiana Harbor, Ind., ½" through 3", Y-1; Alton, Ill. (Lorain, O., base) L1 quotes 2 points lower on ⅛", ¼", ⅜".

Column D: Etna, Pa. N2; Monaca, Pa. P9; Sharon, Pa. M6; Butler, Pa., ⅛" through ⅜", F6; Benwood, W. Va., except 3½ points lower on ⅛", 2½ pts on ¼", 3 pts on ⅜", W10. Wheatland, Pa., except 2 pts lower on ⅛" through ⅜", W9. Following make ½" and larger: Lorain, N3; Youngstown, plus 26.5% on 3½" and 4", R2; Youngstown, Y1; Aliquippa, Pa. J5. Fontana, Calif. K1 quotes 11 points lower on ½" and larger continuous weld and 15.5% on 3½" and 4".

SEAMLESS AND ELECTRIC WELD Size Inches	List Per Ft	Pounds Per Ft	Carload Discounts from List, % Seamless Black A	Seamless Galv. B	Elec. Weld Black C	Elec. Weld Galv. D
2	37.0c	3.68	36.0	20.5	36.0	20.5
2½	58.5	5.82	39.0	23.5	39.0	23.5
3	76.5	7.62	39.0	23.5	39.0	23.5
3½	92.0	9.20	41.0	25.5	41.0	25.5
4	$1.09	10.89	41.0	25.5	41.0	25.5
5	1.48	14.81	41.0	25.5	41.0	25.5
6	1.92	19.18	41.0	25.5	41.0	25.5

Column A: Aliquippa J5; Ambridge N2; Lorain N3; Youngstown Y1.

Column B: Aliquippa J5; Lorain, O. N3; Youngstown Y1.

Columns C & D: Youngstown R2.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft. inclusive.

O.D. In.	B.W. Ga.	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	12.36	14.39	13.96	13.96
1¼	13	14.63	17.05	14.19	16.54
1½	13	16.17	19.02	15.68	18.45
1¾	13	18.39	21.64	17.84	20.99
2	13	20.61	24.24	19.99	23.51
2¼	13	22.96	27.03	22.27	26.22
2¼	12	25.29	29.76	24.53	28.87
2½	12	27.71	32.58	26.88	31.60
2¾	12	29.36	34.53	28.48	33.49
3	12	30.82	36.27	29.90	35.18
3¼	11	35.87	42.22	34.79	40.95
3½	11	38.52	45.35	37.36	43.99
4	10	47.82	56.25	46.39	54.56
4½	9	63.37	74.59	61.47	72.35
5	9	73.37	86.32	71.17	83.73
6	7	112.62	132.51	....	....

Boiler tube producers include Babcock & Wilcox Tube Co., National Tube Co., Globe Steel Tubes Co., Pittsburgh Steel Co., Republic Steel Corp., Standard Tube Co.

CLAD STEELS

(Cents per pound)

Cladding	Plates Carbon Base 10%	Plates Carbon Base 20%	Strip Cold-Rolled Carbon Base 10% Both sides	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
Stainless 302	....	....	....	19.75	21.50–22.50	75.00
304	22.50	26.50	....	20.75	22.50–24.00	77.00
305	....	....	....	....	....	79.00
309	27.00	31.00	....	....	....	....
310	32.50	36.50	....	....	....	105.00
316	27.00	31.00	....	26.00	28.00–32.00	....
317	30.50	34.50	....	....	....	....
318	29.50	33.50	....	....	....	....
321	23.50	27.50	....	23.00	25.00	90.00
347	25.00	29.00	....	24.00	26.00–30.00	94.00
405	18.75	24.75	....	....	....	....
410	18.25	24.25	....	....	....	....
430	18.25	24.25	....	....	....	....
Nickel	27.50	34.50	31.50 41.00	....	....	88.00
Inconel	36.00	46.00	....	....	....	115.00
Monel	29.00	37.00	26.50 33.50	....	....	83.00
Copper*	....	....	19.75† 23.75†	....	....	....

* Deoxodized. † Deduct 4.25c for hot-rolled. Production points for carbon base products; Stainless plates and sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. W16 and Coatesville, Pa. L7; nickel, inconel and monel-clad plates, Coatesville L7; nickel, monel and copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie A13.

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	27
⅝-in. & ⅝-in.	29
¾-in. and larger	26
Longer than 6 in.:	
All diams.	22
Lag bolts, all diams.:	
6 in. and shorter	30
over 6 in. long	28
Ribbed Necked Carriage	26
Blank	40
Plow	40
Step, Elevator, Tap, and Sleigh Shoe	28
Tire bolts	20
Boiler & Fitting-Up Bolts	37

NUTS

H.P. & C.P. Reg. & Heavy Square:	Reg.	Heavy
½-in. and smaller	25	
⅝-in. & ⅝-in.	23	
¾-in.-1½-in.	23	
1⅝ in. and larger	16	
H.P. Hex.:	Reg.	Heavy
½-in. & smaller	33	29
⅝-in. & ⅝-in.	28	25
¾-in.-1½-in.	25	23
1⅝ in. & larger	17	16
C.P. Hex.:		
½-in. & smaller	33	29
⅝-in. & ⅝-in.	30	27
¾-in. & 1½ in.	27	24
1⅝ in. & larger	20	17

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

½-in. and smaller	Hvy.	Reg.	Lght.
	35	41	41
⅝-in. & ⅝-in.	30	36	36
¾-in.-1½ in.	27	31	33
1⅝-in. & larger	17	21	..

STEEL STOVE BOLTS

(F.o.b. plant; per cent off list in packages)

Plain finish	63.5 & 10
Plated finishes	50 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in.	50
¾-in. through 1 in.	43
Longer than 6 in.:	
¼-in. through ⅝-in.	33
¾-in. through 1 in.	13

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	46
1 in. and smaller diam. x over 6 in.	33

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	41
¼-in. diam. & larger	24
N.F. thread, all diams.	18

RIVETS

F.o.b. midwestern plants

Structural ½-in., larger 7.25c

7/8-in., under .....43 off

Washers, Wrought

F.o.b. shipping point, to jobbers .....Net to $1 off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plant)

GRAPHITE

Inches Diam.	Inches Length	Cents per lb
17,18,20	60,72	16.00
8 to 16	48,60,72	16.50
7	48,60	17.75
6	48,60	19.00
4, 5⅛	40	19.50
3	40	20.50
2½	24,30	21.00
2	24,30	23.00

CARBON

40	100,110	7.50
35	100,110	7.50
30	84,110	7.50
24	72 to 104	7.50
17 to 20	34,90	7.50
14	60,72	8.00
10,12	60	8.25

STAINLESS STEEL

(cents per pound)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301...	37.50	30.50	28.50
302...	37.50	33.00	28.50
303...	39.50	36.50	31.00
304...	39.50	35.00	30.00
309...	52.00	52.00	41.50
316...	53.00	55.00	46.00
321...	45.50	44.50	34.00
347...	50.00	48.50	38.50
410...	33.00	27.00	23.00
416...	33.50	33.50	23.50
420...	40.50	43.50	28.50
430...	35.50	27.50	23.50
501...	24.00	22.50	11.50
502...	25.00	23.50	12.50

Baltimore, Type 301 through 347 sheet, except 309 E2.

Baltimore, bars, wire and structurals A10.

Brackenridge,Pa., sheets A4

Bridgeville, Pa., bars, wire, sheets & strip, except Type 309 strip quoted 51.00c U4.

Butler, Pa., sheets and strip except Types 303, 309, 416, 420, 501 & 502 A10.

Carnegie, Pa., strip except Type 416; Type 309 strip quoted 51.00c S18.

Cleveland, strip, except Type 309 quoted 51.00c and except Type 416 A7.

Detroit, strip, except Type 309 M1.

Dunkirk,N.Y. bars, wire A4.

Duquesne, Pa., bars C3.

Fort Wayne, Ind., bars and and wire, except Types 501 and 502 J6.

Gary, Ind., sheets except Type 416 C3.

Harrison, N. J., strip C18.

Massillon, all products, except Type 309 bars, wire & structurals quoted 42.00c. Type 501, 10.50c, Type 502 11.50c R2.

McKeesport, Pa., bars; sheets except Type 416, C3.

McKeesport, Pa., bars & wire except Types 301, 309, 501 & 502; strip Types 410 & 430 only F2.

Middletown, O., sheets and strip, except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars C3.

Pittsburgh, sheets C18.

Reading, Pa., bars & strip except Type 309 bars quoted 41.00c C4.

So. Chicago, Ind., bars & structurals C3.

Syracuse, N. Y., bars wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip, except 309, W2 quotes ¼-cent higher.

Washington, Pa., bars sheets & strip except Type 309 strip quoted 51.00c J3.

Washington, Pa., Types 301 through 347 sheets & strip as listed except 303 & 309; 316 sheets 58.00c, strip 60.00c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, Pa., strip, except Type 300 quoted 51.00c A4.

Youngstown, strip C8.

COAL, CHEMICALS

Spot, cents per gallon, ovens

Pure benzol 22.00

Toluol, one deg. .19.00-24.75

Industrial xylol ..20.50-26.50

Per ton bulk, ovens

Sulphate of ammonia .$45.00

Cents per pound, ovens

Phenol, 40 (carlots, returnable drums) 13.50

Do., less than carlots..14.25

Do., tank cars 12.50

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content, 70% or more, $37; less than 60%, $34.

Imported, net ton, duty paid, metallurgical grade, $39-$40.

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh)

	Cents
Sponge Iron:	
98+% Fe, carlots	15.00
Swedish, c.l.f. New York, in bags	7.40-8.50
Electrolytic Iron:	
Annealed, 99.5% Fe	39.50
Unannealed, 99+% Fe	33.50
Unannealed, 99+% Fe (minus 325 mesh)	48.50
Carbonyl Iron:	
97.9-99.8%, size 5 to 10 microns	70.00-135.00
Aluminum:	
Carlots, freight allowed	27.00
Atomized, 500 lb drums, freight allowed	30.00
Brass, 10-ton lots	23.25-26.25
Copper:	
Electrolytic	27.75
Reduced	27.00
Lead	18.50
Manganese:	
Minus 100-mesh	52.00-55.00
Minus 35 mesh	48.00
Minus 200 mesh	56.00
Nickel, unannealed	61.00-66.00
Silicon	34.00-40.00
Solder (plus cost of metal)	8.50
Stainless Steel, 302	75.00
Tin	86.50
Zinc, 10-ton lots	15.25-18.00
	Dollars
Tungsten:	
99%, minus 80 to 200 mesh, freight allowed, over 1000 lb	2.90
1000 lb	2.95
less than 1000 lb	3.00
98.8%, minus 65 mesh, freight allowed, 1000 lb and over	2.90
less than 1000 lb	3.00
Molybdenum:	
99%, minus 80 to 200 mesh, over 500 lb	2.25
200 to 500 lb	2.60
less than 200 lb	2.75
82-88%, freight allowed, 2000 lb and over	2.40
less than 2000 lb	2.45
Chromium, electrolytic 99% Cr min.	3.50

METALLURGICAL COKE

Price per net ton

BEEHIVE OVENS

Connellsvll,fur.	$14.00-14.50
Connellsvll,fdry.	15.50-16.50
New River, foundry	19.00
Wise county, foundry	15.95
Wise county, furnace	15.20

OVEN FOUNDRY COKE

Kearney, N. J., ovens	$22.00
Everett, Mass., ovens	
New England, del.†	23.40
Chicago, ovens	21.00
Chicago, del.	†22.45
Detroit, del.	24.91
Terre Haute, ovens	21.20
Milwaukee, ovens	21.75
Indianapolis, ovens	20.75
Chicago, del.	24.12
Cincinnati, del.	23.67
Detroit, del.	24.65
Ironton, O., ovens	20.40
Cincinnati, del.	22.71
Painesville, O., ovens	21.90
Buffalo, del.	24.02
Cleveland, del.	23.62
Erie, del.	22.04
Birmingham, ovens	19.15
Philadelphia, ovens	21.25
Neville Island,Pa.,ovens	21.00
Swedeland, Pa., ovens	21.20
Portsmouth, O., ovens	20.15
Cincinnati, del.	22.71
Detroit, ovens	21.65
Detroit, del.	22.65
Buffalo, del.	24.00
Flint, del.	24.09
Pontiac, del.	23.04
Saginaw, del.	24.40

Includes representative switching charge of: *, $1.05; †, $1.45, one-track charge being $1.20, two tracks $1.40, and three or more tracks $1.50. ‡ Or within $4.15 freight zone from works.

WAREHOUSE STEEL PRODUCTS

(Prices, cents per pound, for delivery within switching limits, subject to extras)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Galv. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.	H.R. Alloy 4140§		Carbon	Floor
New York (city)	5.75	6.84	7.25	6.04	...	5.85	6.64	8.60	5.65	5.90	7.34
New York(c'try)	5.55	6.64	7.05	5.84	...	5.65	6.44	8.40	5.45	5.70	7.14
Boston (city) ..	5.93	6.68	7.19	5.98	...	5.80	6.50	8.70	5.75	6.08	7.28
Boston (c'try) .	5.73	6.48	6.99	5.78	...	5.60	6.30	8.50	5.55	5.88	7.08
Phila. (city) ..	6.45	6.60	6.95	5.90	...	5.75	6.46	8.40	5.50	5.70	6.80
Phila. (c'try)..	6.20	6.35	6.70	5.65	...	5.50	6.21	8.15	5.25	5.45	6.55
Balt. (city) ...	5.25	6.44	6.66	5.79	...	5.69	6.39	...	5.69	5.40	7.04
Balt. (c'try) ..	5.05	6.24	6.46	5.59	...[9]	5.49	6.19	...	5.49	5.20	6.84
Norfolk, Va. ..	6.10	...	...	...	...	6.15	7.20	...	6.20	6.15	7.55
Wash. (w'hse).	5.46	...	...	6.00	...	5.90	6.62	...	5.90	5.61	7.25
Buffalo (del.)..	5.25	6.00	7.00	5.61	...	5.25	5.95	10.10††[5]	5.35	5.65	6.95
Buffalo (w'hse)	5.05	5.80	6.80	5.41	...	5.05	5.75	9.90††[5]	5.15	5.45	6.75
Pitts. (w'hse)..	5.05	5.80*	6.45-6.70	5.20	6.15	5.00	5.75	9.55††	5.05	5.15	6.40
Detroit (w'hse).	5.33	6.08*	7.09	5.49	...	5.39	6.03	9.86††[5]	5.44	5.59	6.68
Cleveland (del.)	5.25	6.00	7.15	5.44	6.35	5.32	5.95	8.31	5.37	5.52	6.72
Cleve. (w'hse).	5.05	5.80	6.95	5.24	6.15	5.12	5.75	8.16	5.17	5.32	6.52
Cincin. (w'hse).	5.32	5.84	6.44	5.49	...	5.39	6.10	9.90††[5]	5.44	5.59	6.75
Chicago (city) .	5.25	6.00*	6.90	5.30	...	5.20	5.85	9.75††[5]	5.25	5.40	6.60
Chicago (w'hse)	5.05	5.80*	6.70	5.10	...	5.00	5.65	9.55††[5]	5.05	5.20	6.40
Milwaukee(city)	5.39	6.14*	7.04	5.44	...	5.34	6.09	9.89††[5]	5.39	5.54	6.74
Milwau. (c'try).	5.19	5.94*	6.84	5.24	...	5.14	5.89	9.69††[5]	5.19	5.34	6.54
St. Louis (del.).	5.58	6.33	7.23	5.63	...	5.53	6.28	10.08††[5]	5.58	5.73	6.93
St. L. (w'hse).	5.38	6.13	7.03	5.43	...	5.33	6.08	9.88††[5]	5.38	5.53	6.73
Birm'ham (del.)	5.20[10]	5.95	6.30[2]	5.25[10]	...	5.15[10]	6.88	...	5.20[10]	5.35[10]	7.63[10]
Birm'hm(w'hse)	5.05[10]	5.80	6.15[2]	5.10[10]	...	5.00[10]	...	...	5.05[10]	5.20[10]	...
Omaha, Nebr. .	6.13‡	...	8.33	6.13	...	6.18	6.98	...	6.18	6.38	7.83
Los Ang. (city)	6.00	7.50	7.03[3]	6.05	8.30	6.00	7.75	...	5.90	6.00	8.20
L. A. (w'hse)..	5.80	7.30	7.50[3]	5.85	8.10	5.80	7.55	...	5.70	5.80	8.00
San Francisco .	6.25[9]	7.60[3]	7.50[3]	6.75[9]	8.25[3]	6.15[9]	7.55	...	6.00[9]	6.15[9]	8.10[9]
Seattle-Tacoma.	6.60	8.15[3]	...	6.85	...	6.35	8.50	10.10	6.20	6.35[7]	8.40[7]
Kans. (w'hse).	5.65	6.40	7.30	5.70	...	5.60	6.35	10.10	5.65	5.80	7.00

* Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes extra for 10 gage; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; [2]—500 to 1499 lb; [3]—450 to 1499 lb; [5]—1000 to 1999 lb; [7]—300 to 999 lb; [8]—300 to 499 lb; [9]—400 to 9999 lb; [10]—500 to 9999 lb inclusive.

REFRACTORIES

(Prices per 1000 bricks, f.o.b. plant)

FIRE CLAY BRICK

Super Duty: St. Louis, Vandalia, Farber, Mexico, Mo., Olive Hill, Ky., Clearfield, or Curwensville, Pa., Ottawa, Ill., $106. Hard-fired, $142 at above points.

High-Heat Duty: Salina, Pa. $91; Woodbridge N. J., St. Louis, Farber, Vandalia, Mexico, Mo., West Decatur, Orviston, Clearfield, Beach Creek, or Curwensville, Pa., Olive Hill, Hitchins, Haldeman, or Ashland, Ky., Troup, or Athens, Tex., Stevens Pottery, Ga., Portsmouth, or Oak Hill, O., Ottawa, Ill., $86.

Intermediate-Heat Duty: St. Louis, or Vandalia, Mo., West Decatur, Orviston, Beach Creek, or Clearfield, Pa., Olive Hill, Hitchins, or Haldeman, Ky., Athens, or Troup, Tex., Stevens Pottery, Ga., Portsmouth, O., Ottawa, Ill., $80.

Low-Heat Duty: Oak Hill, or Portsmouth, O., Clearfield, Orviston, Pa., Bessemer, Ala., $72; Ottawa, Ill., $70.

LADLE BRICK

Dry Press: Freeport, Merill Station, Clearfield, Pa., Irondale, Wellsville, O., Chester, W. Va., New Cumberland, W. Va., $60.

Wire Cut: Chester, W. Va., Wellsville, O., New Cumberland, W. Va., $58.

MALLEABLE BUNG BRICK

St. Louis, Mo., Olive Hill, Ky., $96; Ottawa, Ill., $90; Beach Creek, Pa., $86.

SILICA BRICK

Mt. Union, Claysburg, or Sproul, Pa., Portsmouth, O., Ensley, Ala., $86; Hays, Pa., $91; Joliet or Rockdale, Ill., E. Chicago, Ind., $95; Lehi, Utah, Los Angeles, $101.

Eastern Silica Coke Oven Shapes (net ton): Claysburg, Mt. Union, Sproul, Pa., Birmingham, $84.

Illinois Silica Coke Oven Shapes (net ton): Joliet or Rockdale, Ill., E. Chicago, Ind., Hays, Pa., $85.

BASIC BRICK

(Base prices per net ton; f.o.b. works, Baltimore or Chester, Pa.)

Burned chrome brick, $66; chemical-bonded chrome brick, $69; magnesite brick, $91; chemical-bonded magnesite, $80.

MAGNESITE

(Base prices per net ton, f.o.b. works, Chewelah, Wash.)

Domestic dead-burned, ⅜" grains; bulk, $33; single paper bags, $38.

DOLOMITE

(Base prices per net ton)

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Narlo, Millersville, Martin, Gibsonburg, Woodville, O., $12.25; Thornton, McCook, Ill., $12.35; Dolly Siding, Bonne Terre, Mo., $12.45.

ORES

LAKE SUPERIOR IRON ORE

Gross ton, 51½% (natural), lower lake ports. After Jan. 25, 1950, increases or decreases, if any, in upper lake rail freight, dock handling charges and taxes thereon are for buyer's account.

Old range bessemer	$8.10
Old range nonbessemer	7.95
Mesabi bessemer	7.85
Mesabi nonbessemer	7.70
High phosphorus	7.70

EASTERN LOCAL ORE

Cents per unit, del E. Pa.

Foundry and basic 56.62% concentrates contract	16.00

FOREIGN ORE

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	17.00
Long-term contract	15.00
North African hematites	15.75
Brazilian iron ore, 68-69%	18.00

TUNGSTEN ORE

Wolframite, scheelite, net ton unit, duty paid	$20-22

MANGANESE ORE

Long term contracts, nominal; nearby, 48%, duty paid, 79.8c-81.8c per long ton unit, c.i.f. U. S. ports; prices on lower grades adjusted to manganese content and impurities.

CHROME ORE

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$32.50
48% 3:1	35.00-36.00
48% no ratio	26.00

South African Transvaal

44% no ratio	$17.00-18.00
45% no ratio	17.30-18.30
48% no ratio	26.00
50% no ratio	27.00-27.50

Brazilian

44% 2.5:1 lump	$32.00

Rhodesian

45% no ratio	$20.00-21.00
48% no ratio	26.00
48% 3:1 lump	35.00-36.00

Domestic—rail nearest seller

48% 3:1	$39.00

MOLYBDENUM

Sulphide concentrates per lb, molybdenum content, mines	$0.90

FERROALLOYS

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $65, Palmerton, Pa.; $66, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $172 per gross ton of alloy, cl., packed, $184; gross ton lots, packed, $199; less gross ton lots, packed, $216; f.o.b. Alloy, W. Va., Niagara Falls, N. Y., or Welland, Ont. Base price: $174, f.o.b. Birmingham and Johnstown, Pa., furnaces; $172, Sheridan, Pa.; $175, Etna, Pa. Shipment from Pacific Coast warehouses by one seller add $33 to above prices, f.o.b. Los Angeles, San Francisco, Portland, Oreg. Shipment from Chicago warehouse, ton lots, $214; less gross ton lots, $231 f.o.b. Chicago. Add or subtract $2.15 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 80-85%). Carload, lump, bulk, max. 0.10% C, 24.75c per lb of contained Mn, carload packed 25.5c, ton lot 26.6c, less ton 27.8c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max. 0.50% C, and 4.5c for max. 75% C—max. 7% Si. **Special Grade:** (Mn 90% approx., C 0.07% max., P. 0.06% max.). Add 0.5c to above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max., Si 1.5% max.). Carload, lump, bulk 18.15c per lb of contained Mn, carload packed 18.9c, ton lot 20.0c, less ton 21.2c. Delivered. Spot, add 0.25c.

Manganese Metal, 2" x D (Mn 96% min., Fe 2% max., Si 1% max., C 0.2% max.): Carload lump bulk, 29c per lb of metal; packed, 35.5c; ton lot 31.25c, less ton lot 33.25c. Delivered. Spot, add 2c.

Manganese Electrolytic: Less than 250 lb, 35c; 250 lb to 1999 lb, 32c; 2000 to 35,999 lb, 30c; 36,000 lb or more, 28c. Premium for hydrogen-removed metal 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 8.95c per lb of alloy, carload packed, 9.70c, ton lot 10.60c, less ton 11.60c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. Spot, add 0.25c.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk, 20.5c per lb of contained Cr. c.l., packed 21.4c, ton lot 22.55c, less ton 23.95c. Delivered: Spot, add 0.25c.

"SM" High-Carbon Ferrochrome: (Cr 60-65%, Si 4-6%, Mn 4-6%, C 4-6%). Add 1.1c to high-carbon ferrochrome prices.

(*Please turn to page* 139)

UNIVERSITY OF MICHIGAN LIBRARIES

Lead and Zinc Prices Advance

Sustained active demand for limited supplies lifts quotations ½-cent to 11.50c, East St. Louis, for prime western zinc and ¼-cent to 11.05c, St. Louis, for lead

New York—Trend in nonferrous metal markets continues upward. Lead sellers advanced prices ¼-cent May 4 to 11.05c, St. Louis. Bookings for shipment this month already exceed those sold for April delivery which was the largest reported since last August.

Market strength is due to heavy consumer demand as well as tightening in supplies. Labor troubles in Mexico have reduced sharply the amount of metal being received from that country.

Zinc prices have risen 1.50 cents a pound since Apr. 1. Sellers advanced prices ¼-cent a pound on May 1 and a like amount May 4 to the basis of 11.50c, East St. Louis, for prime western. As in lead, the advance is attributed to continuing strong demand from domestic consumers and steadily tightening supplies. Leading sellers still hold substantial waiting lists, being unable to satisfy all needs fully.

Tin Market Erratic — Tin prices continue to fluctuate rapidly within a narrow range of 76.25c to 77.25c, New York, for Straits spot. The market was quoted 77.00c toward the end of the week. The British Ministry of Supply sold 1000 tons of Straits tin which was afloat on vessels due to arrive in New York this week at 75.00c, ex dock New York. It is uncertain whether this metal will be offered for resale and, hence, traders are unable to forecast the immediate future price trend. Demand for nearby deliveries have been active.

Copper Market Strong — Demand for copper continues active, but prices are unchanged in a strong market. Pressure for delivery is especially strong for May delivery, as indicated by fact that some fabricators will be forced to curtail operations during the second half of the period due to lack of copper.

At 28.97c each, Chase Brass & Copper Co., Waterbury, Conn., is awarded contract for 1200 tons annealed cartridge brass disks, Frankford Arsenal, Pa.

Silver Advances—Silver prices advanced 1 cent an ounce May 4 to 72.75c, New York. This is the first price change since the closing days of March when a total reduction of 1.50 cents was posted. An embargo placed by the Mexican government on the export of refined silver from that country last month is a major factor in reducing available supplies. Demand from the silverware manufacturers has been increasing.

Kramer Buys Ajax Metal Plant

Chicago—H. Kramer & Co., this city, has purchased the plant, equipment, inventory, metal trademarks, etc. of the Ajax Metal Co., Philadelphia. The plant will be operated as the Ajax Metal Division of H. Kramer & Co. It will continue as one of the leading producers of quality brass and bronze ingots, phosphor copper, babbitts and other alloys.

No change of operations or personnel are contemplated, says M. L. Chapman, president of the company. E. A. Ginkinger, who has been with the Ajax organization for 32 years, has been elected vice president and general manager of the Ajax Metal Division.

Dr. G. H. Clamer, president of the Ajax Metal Co., says the company is changing its name to Ajax Electro Metallurgical Corp. With its associated companies, including Ajax Electric Furnace Corp., Ajax Electrothermic Corp., Ajax Electric Co. Inc., and Ajax Engineering Corp., the company will continue in the manufacture of electric furnaces and equipment used in the metallurgical field. Dr. Clamer will become president of the Ajax Electro Metallurgical Corp. and will continue as president of the associated companies.

STEEL'S Metal Price Averages for April, 1950
(Cents per pound)

Electrolytic Copper, del. Conn.	18.940
Lead, St. Louis	10.420
Prime, Western Zinc, E. St. Louis	10.690
Straits Tin, New York	76.445
Primary Aluminum Ingots, del	17.000
Antimony, f.o.b. Laredo, Tex.	24.500
Nickel, f.o.b. refinery	40.000
Silver, New York	71.750

Aluminum Output Rate Gains

Washington—Although total output of primary aluminum in February declined 3 per cent to 50,688 tons because of the shorter month, the average daily rate of production increased, reports the Bureau of Mines. Production amounted to 52,023 tons in January and 49,749 tons in February, 1949.

On Feb. 6, the first metal was poured by the Aluminum Co. of America at its Point Comfort plant near Port Lavaca, Tex. This reduction plant is the first one constructed in the United States since World War II and has been designed to utilize natural gas as the source of power.

Total inventories of primary aluminum were reduced to 17,885 tons by Feb. 28, reflecting an increase in aluminum sold or used to more than 60,000 tons, the greatest monthly total in over two years. At the end of January stocks totaled 28,165 tons while the amount sold or used in that month amounted to 52,959 tons.

Net imports gained 5 per cent in February as recipts of crude aluminum from Canada increased to 12,104 tons and those from Europe, predominantly France, to 222 tons. Exports of sheets, plates, strips, etc., to the Republic of the Philippines declined during February, but sharp increases were noted in shipments to Indonesia and Venezuela.

Buys Zinc Plant Facilities

St. Louis—American Zinc, Lead & Smelting Co.'s wholly owned subsidiary, American Zinc Co. of Illinois, bought all the plant facilities and leases formerly held by Reconstruction Finance Corp. on installations at Monsanto, Ill., and Fairmont City, Ill., for $1,080,000. The deal was in cash.

The facilities include installations at the Monsanto electrolytic zinc plant and zinc concentrate roasting, sulphuric acid, zinc furnace blocks and by-products facilities located at the Fairmont City plant. The company plans an expenditure of about $500,000 covering plant changes that will materially improve the overall metallurgical and plant efficiency.

Vulcan To Boost Tin Output

Sewaren, N. J.—Vulcan Detinning Co., this city, is stepping up production at its recently-completed tin smelter so as to approach the planned capacity rate of five tons daily. This project, the only privately-owned tin smelting plant in the nation, was constructed by the Wigton-Abbott Corp., Plainfield, N. J., at a cost of about $1 million. It utilizes Vulcan's newly-developed process for extraction of tin from low grade Bolivian concentrates, heretofore considered commercially impractical. Rate of production was kept at a low level for the first four months to allow testing and adjusting of various pieces of equipment.

Brass Ingot Output Increases

Washington—Production of brass ingot increased 16 per cent in January to 24,066 tons, a new high since October, 1948, reports the Bureau of Mines. Output of composition ingot increased 23 per cent to 9164 tons; 80-10-10 bronze, 59 per cent to 673 tons; yellow brass, 25 per cent to 435 tons.

Total copper-brass scrap consumption by ingot makers in January was 33,066 tons compared with 29,879 tons in December. The largest gain was 1533 tons in consumption of composition scrap. There were increases of over 500 tons each in the use of No. 2 wire, mixed heavy and light copper scrap, yellow brass, auto radiators and bronze, but consumption of low grade scrap and residues decreased 997 tons.

During January, the Bureau of Federal Supply awarded contracts for conversion of around 40 million pounds of cartridge cases into ingot, presumably for addition to the national stockpile.

Inventories of copper and brass scrap held by ingot makers, after increasing in November and December, were virtually unchanged in January.

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 19.50c, Conn. Valley; Lake, 19.62½c, Conn. Valley.

Brass Ingot: 85-5-5-5 (No. 115) 17.75-18.75c; 88-10-2 (No. 215) 25.75c; 80-10-10 (No. 305) 22.25c; No. 1 yellow (No. 405) 15.25-16.50c.

Zinc: Prime western 11.25c; brass special 11.50c, intermediate 11.75c, East St. Louis; high grade 12.35c delivered.

Lead: Common, 11.05c; chemical, 11.15c; corroding, 11.15c, St. Louis.

Primary Aluminum: 99% plus, ingots 17.00c, pigs 16.00c. Base prices for 10,000 lb and over, f.o.b. shipping point.

Secondary Aluminum: Piston alloys 16.50-17.00c; No. 12 foundry alloy (No. 2 grade) 16.00-16.50c; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 17.25-17.50c; grade 2, 16.50-16.75c; grade 3, 15.25-15.50c; grade 4, 14.50-14.75c. Prices include freight at carload rate up to 75 cents per 100 lb.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over, 20.50c, f.o.b. Freeport, Tex.

Tin: Grade A, spot, 77.00c; prompt del., 76.75c; May del. 76.50c; June del. 76.00c.

Antimony: American 99-99.8% and over but not meeting specifications below 24.50c; 99.8% and over (arsenic 0.05% max.; other impurities 0.1% max.) 25.00c; f.o.b. Laredo, Tex., for bulk shipments. Foreign, 99%: Chinese and Yugoslavian, 22.00c; English and Belgian, prompt, 23.00c, New York.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 40.00c; 25-lb pigs, 42.50c; "XX" nickel shot, 43.50c; "F" nickel shot or ingots, for addition to cast iron, 40.50c. Prices include import duty.

Mercury: Open market, spot, New York $71-$74 per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $24.50 per lb contained Be.

Cadmium: "Regular" straight or flat forms, $2 del.; special or patented shapes, $2.15.

Cobalt: 97-99%, $1.80 per lb for 550 lb (keg); $1.80 per lb for 100 lb (case); $1.87 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York, 71.75c per oz.

Platinum: $66-$69 per ounce.

Palladium: $24 per troy ounce.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Base prices, cents per pound, f.o.b. mill; based on 19.50-cent copper.)

Sheet: Copper 33.18; yellow brass 29.61; commercial bronze, 95%, 33.08; 90%, 32.58; red brass, 85% 31.56; 80%, 31.07; best quality, 30.51; nickel silver, 18%, 43.04; phosphor-bronze, grade A, 5% 50.90.

Rods: Copper, hot-rolled 29.03; cold-drawn 30.28; yellow brass free cutting, 23.99; commercial bronze, 95% 32.77; 90% 32.27; red brass 85% 31.25; 80% 30.76.

Seamless Tubing: Copper 33.22; yellow brass 32.62; commercial bronze 90% 35.24; red brass 85% 34.47; 80% 33.98.

Wire: Yellow brass 29.90; commercial bronze, 95% 33.37; 90% 32.87; red brass, 85% 31.85; 80% 31.36; best quality brass 30.80.

Copper Wire: Bare soft, f.o.b., eastern mills, 100,000 lb lots 23.54c, l.c.l. 24.17, c.l. 23.67; weatherproof, f.o.b. eastern mills, 100,000 lb lots 25.60, l.c.l. 26.35, c.l. 25.85; magnet, delivered, 15,000 lb or more 29.50, l.c.l. 30.25.

ALUMINUM

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range, Inches	Widths or Diameters, In., Incl.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	26.9	...	...
0.135-0.096	12-48	27.4	...	...
0.095-0.077	12-48	27.9	26.0	29.6
0.076-0.068	12-48	28.5	26.2	29.8
0.067-0.061	12-48	28.5	26.2	29.8
0.060-0.048	12-48	28.7	26.4	30.1
0.047-0.038	12-48	29.1	26.6	30.4
0.037-0.030	12-48	29.5	27.0	30.9
0.029-0.024	12-48	29.9	27.3	31.3
0.023-0.019	12-36	30.5	27.7	31.8
0.018-0.017	12-36	31.1	28.3	32.6
0.016-0.015	12-36	31.8	28.9	33.5
0.014	12-24	32.7	29.7	34.6
0.013-0.012	12-24	33.6	30.4	35.5
0.011	12-24	34.6	31.3	36.7
0.010-0.0095	12-24	35.6	32.3	38.0
0.009-0.0085	12-24	36.8	33.4	39.5
0.008-0.0075	12-24	38.1	34.6	41.1
0.007	12-18	39.5	35.9	42.9
0.006	12-18	41.0	37.2	47.0

* Minimum length, 60 inches. † Maximum diameter, 24 inches.

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or distance across flats	—Round— R317-T4, 17S-T4	R317-T4	—Hexagonal— 17S-T4
0.125	48.0	....	....
0.156-0.203	41.0	....	....
0.219-0.313	38.0	....	....
0.344	37.0	....	47.0
0.375	36.5	45.5	44.0
0.406	36.5	....	....
0.438	36.5	45.5	44.0
0.469	36.5	....	....
0.500	36.5	45.5	44.0
0.531	36.5	....	....
0.563	36.5	....	41.5
0.594	36.5	....	....
0.625	36.5	43.0	41.5
0.656	36.5	....	....
0.688	36.5	....	41.5
0.750-1.000	35.5	40.5	39.0
1.063	35.5	....	37.5
1.125-1.500	34.5	39.0	37.5
1.563	34.5	....	36.5
1.625	33.5	....	36.5
1.688-2.000	33.5	....	....

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more, $16.00 per cwt; add 50c per cwt, 10 sq ft to 140 sq ft. Pipe: Full coils, $16.00 per cwt. Traps and bends: List price plus 40%.

ZINC

Sheets, 16.75c f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 16.00c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 15.00c; over 12-in., 16.00c.

NICKEL

(Base prices f.o.b. mill)

Sheets, cold-rolled, 60.00c. Strip, cold-rolled, 66.00c. Rods and shapes, 56.00c. Plates 58.00c. Seamless tubes, 89.00c.

MONEL

(Base prices, f.o.b. mill)

Sheets, cold-rolled 47.00c; Strip, cold-rolled, 50.00c. Rods and shapes, 45.00c. Plates, 46.00c. Seamless tubes, 80.00c. Shot and blocks, 40.00c.

MAGNESIUM

Extruded Rounds, 12 in. long, 1.312 in. in diameter, less than 25 lb. 52.00-56.00c; 25 to 99 lb, 42.00-46.00c; 100 lb to 4000 lb, 35.00-36.00c.

Plating Materials

Chromic Acid: 99.9% flake, f.o.b. Philadelphia, carloads, 25.50c; 5 tons and over 26.00c; 1 to 5 tons, 26.50c; less than 1 ton 27.00c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed; Flat untrimmed 29.84c; oval 29.34c; cast 27.87½c.

Copper Cyanide: 70-71% Cu, 100-lb drums, 1000 lb 46.50c, under 1000 lb 48.50c f.o.b. Niagara Falls, N. Y.

Sodium Cyanide: 96-98%, ½-oz ball, in 200 lb drums, 1 to 900 lb, 18.00c; 1000 to 19,000 lb, 17.00c, f.o.b. Niagara Falls, N. Y. Packaged in 100 lb drums add ½-cent.

Copper Carbonate: 54-56% metallic Cu; 50 lb bags, up to 250 lb, 25.75c; over 250 lb, 24.75c, f.o.b. Cleveland.

Nickel Anodes: Rolled oval, carbonized, carloads, 56.00c; 10,000 to 30,000 lb, 57.00c; 3000 to 10,000 lb, 58.00c; 500 to 3000 lb, 59.00c; 100 to 500 lb, 61.00c; under 100 lb, 64.00c; f.o.b. Cleveland.

Nickel Chloride: 100-lb kegs, 26.50c; 400-lb bbl. 24.50c, f.o.b. Cleveland, freight allowed on barrels, or 4 or more kegs.

Tin Anodes: Bar, 1000 lb and over 94.00c; 500 to 999 lb, 94.5c; 200 to 499 lb, 95.00c; less than 200 lb, 96.5c, ball, 1000 lb and over, 96.25c; 500 to 999 lb, 96.75c; 200 to 499 lb 97.25c; less than 200 lb, 98.75c, f.o.b. Sewaren, N. J.

Sodium Stannate: 25 lb cans only, less than 100 lb, to consumers 59.7c; 100 or 300 lb drums only, 100 to 500 lb, 51.4c; 600 to 1900 lb, 49.0c; 2000 to 9900 lb, 47.3c, f.o.b. Sewaren, N. J. Freight not exceeding St. Louis rate allowed.

Zinc Cyanide: 100 lb drums, less than 10 drums 40.00c, 10 or more drums 38.00c, f.o.b. Niagara Falls, N. Y.; 41.25c and 39.25c, respectively, del. Cleveland or Philadelphia.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb 84.50c; more than 2000 lb, 82.50c, f.o.b. Carteret, N. J.

Stannous Chloride (Anhydrous): In 400 lb bbl, 70.80c; 100 lb kegs 71.80c, f.o.b. Carteret, N. J.

Scrap Metals

BRASS MILL ALLOWANCES

Prices in cents per pound for less than 15,000 lb, f.o.b. shipping point.

	Clean Heavy	Rod Ends	Clean Turnings
Copper	16.50	16.50	15.75
Yellow Brass	13.37½	13.12½	12.12½
Commercial Bronze			
95%	15.50	15.25	14.75
90%	15.25	15.00	14.50
Red brass			
85%	15.00	14.75	14.25
80%	14.62½	14.37½	13.87½
Best Quality (71-80%)	14.25	14.00	13.50
Muntz Metal	12.37½	12.12½	11.62½
Nickel, silver, 10%	15.37½	15.12½	7.68¾
Phos. bronze, A	16.75	16.50	15.50
Naval brass	12.75	12.50	12.00
Manganese bronze	12.75	12.50	11.87½

BRASS INGOT MAKERS' BUYING PRICES

(Cents per pound, delivered eastern refineries, carload lots)

No. 1 copper 16.00; No. 2 copper 15.00; light copper 14.00; composition red brass 13.75; radiators 11.00; heavy yellow brass 10.50.

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 16.00; No. 2 copper 15.00; light copper 14.00; refinery brass (60% copper) per dry copper content 15.00.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 14.25-14.50; No. 2 13.25-13.50; light copper 12.25-12.50; No. 1 composition red brass 11.75-12.00; No. 1 composition turnings 11.00-11.25; mixed brass turnings 7.00-7.25; new brass clippings 11.25-11.75; No. 1 brass rod turnings 10.00-10.25; light brass 7.00-7.25; heavy yellow brass 7.75-8.00; new brass rod ends 10.50-10.75; auto radiators, unsweated 9.00-9.25; cocks and faucets, 9.50-9.75; brass pipe 9.75-10.00.

Lead: Heavy 9.00; battery plates 4.75; linotype and stereotype 9.00-9.25; electrotype 8.50-8.75; mixed babbitt 8.00-8.25.

Zinc: Old zinc 5.25-5.50; new die cast scrap 5.25-5.50; old die cast scrap 3.75-4.00.

Tin: No. 1 pewter 39.00-41.00; block tin pipe 60.00-62.00; No. 1 babbitt 30.00-32.00.

Aluminum: Clippings 2S 10.00-10.50; old sheets 7.00-7.50; crankcase 7.00-7.50; borings and turnings 4.00.

DAILY PRICE RECORD

1950	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
May 4	19.50	11.05	11.50	77.00	17.00	24.50	40.00	72.75
May 3	19.50	10.80	11.25	77.25	17.00	24.50	40.00	71.75
May 1-2	19.50	10.80	11.25	76.50	17.00	24.50	40.00	71.75
Apr. Avg.	18.94	10.42	10.69	76.445	17.00	24.50	40.00	71.75
Apr. 28-29	19.50	10.80	11.00	77.00	17.00	24.50	40.00	71.75
Apr. 26-27	19.50	10.80	11.00	76.50	17.00	24.50	40.00	71.75
Apr. 25	19.50	10.55	11.00	76.75	17.00	24.50	40.00	71.75
Apr. 24	19.50	10.55	11.00	77.00	17.00	24.50	40.00	71.75
Apr. 21-22	19.50	10.55	11.00	77.625	17.00	24.50	40.00	71.75
Apr. 20	19.50	10.55	11.00	77.50	17.00	24.50	40.00	71.75
Apr. 19	19.50	10.30	11.00	77.00	17.00	24.50	40.00	71.75
Apr. 18	19.50	10.30	10.50	76.75	17.00	24.50	40.00	71.75
Apr. 17	18.50	10.30	10.50	77.50	17.00	24.50	40.00	71.75
Apr. 14-15	18.50	10.30	10.50	76.75	17.00	24.50	40.00	71.75
Apr. 12-13	18.50	10.30	10.50	76.50	17.00	24.50	40.00	71.75
Apr. 11	18.50	10.30	10.50	76.25	17.00	24.50	40.00	71.75
Apr. 6-10	18.50	10.30	10.50	76.00	17.00	24.50	40.00	71.75
Apr. 5	18.50	10.30	10.50	75.375	17.00	24.50	40.00	71.75
Apr. 3-4	18.50	10.30	10.50	74.75	17.00	24.50	40.00	71.75
Apr. 1	18.50	10.30	10.25	74.75	17.00	24.50	40.00	71.75

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. E. St. Louis; Zinc, prime western, del. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk, f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

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IRON AND STEEL SCRAP

Consumer prices, except as otherwise noted, including brokers' commissions, as reported to STEEL, May 4, 1950; gross tons except as noted. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

May 4	$30.92
Apr. 27	30.17
Apr. 1950	29.40
May 1949	22.29
May 1945	19.13

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

No. 1 Heavy Melt.	*34.50-35.50*
No. 2 Heavy Melt.	30.00-31.00
No. 1 Busheling	*34.50-35.50*
No. 1 Bundles	*34.50-35.50*
No. 2 Bundles	*28.00*
No. 3 Bundles	25.50-26.50*
Heavy Turnings	32.00-32.50
Machine Shop Turnings	*25.00-25.50†*
Mixed Borings, Turnings	*25.00-25.50†*
Short Shovel Turnings	*28.50*
Cast Iron Borings	*26.00*
Low Phos. Steel	*37.00-37.50*

Cast Iron Grades

No. 1 Cupola Cast	36.00-37.00
No. 1 Machinery Cast	*40.00-41.00*
Charging Box Cast	36.00-37.00
Heavy Breakable Cast	32.50-33.50

Railroad Scrap

No. 1 R.R. Heavy Melt	*37.50-38.00‡*
Rails, Random Lengths	*40.00-41.00*
Rails, 2 ft. and under	*41.50-42.00*
Rails, 18 in. and under	*42.50-43.00*
Railroad Specialties	*39.00-40.00*
Axles	*37.00-38.00*
Angles, Splice Bars	*40.00-41.00**

* Nominal.
† Crushers' buying prices.
‡ Brokers' buying prices.

CLEVELAND

No. 1 Heavy Melt. Steeel	*$31.00-31.50*
No. 2 Heavy Melt. Steel	*29.00-29.50*
No. 1 Busheling	*31.00-31.50*
No. 1 Bundles	*31.00-31.50*
No. 2 Bundles	*25.50-26.00*
Machine Shop Turnings	*21.50-22.00*
Mixed Borings, Turnings	*24.50-25.00*
Short Shovel Turnings	*24.50-25.00*
Cast Iron Borings	*24.50-25.00*
Low Phos.	*32.00-32.50*

Cast Iron Grades

No. 1 Cupola	*45.00-45.50*
Charging Box Cast	*39.50-40.50*
Stove Plate	*37.00-38.00*
Heavy Breakable Cast	*34.00-34.50*
Unstripped Motor Blocks	*32.50-33.50*
Brake Shoes	*30.50-31.50*
Clean Auto Cast	*45.50-46.50*
No. 1 Wheels	*38.50-39.00*
Burnt Cast	*34.50-35.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*34.50-35.00*
R.R. Malleable	*40.50-41.00*
Rails, 3 ft and under	*43.00-44.00*
Rails, 18 in. and under	*45.00-46.00*
Rails, Random Lengths	*40.00-41.00*
Cast Steel	*37.00-37.50*
Railroad Specialties	*37.00-37.50*
Uncut Tires	*38.00-39.00*
Angles, Splice Bars	*42.50-43.00*

VALLEY

No. 1 Heavy Melt. Steel	*$34.50-35.00*
No. 2 Heavy Melt. Steel	*32.00-33.00*
No. 1 Bundles	*34.50-35.00*
No. 2 Bundles	*27.50-28.50*
Machine Shop Turnings	*24.00-25.00*
Short Shovel Turnings	*26.50-27.00*
Cast Iron Borings	*26.50-27.00*
Low Phos.	*35.50-36.00*

Railroad Scrap

No. 1 R.R. Heavy Melt.	*35.50-36.00*

PHILADELPHIA

No. 1 Heavy Melt. Steel	*$27.00-27.50*
No. 2 Heavy Melt. Steel	*25.00-25.50*
No. 1 Busheling	*26.00-26.50*
No. 1 Bundles	*27.00-27.50*
No. 2 Bundles	*21.50-22.00*
Machine Shop Turnings	*19.00-19.50*
Short Shovel Turnings	21.00
Mixed Borings, Turnings	17.00-18.00
Low Phos. Punchings and Plate, elec. fur. grade	*31.00-32.00*
Low Phos. Plate, 5 ft & Under	*30.50-32.00*
Elec. Furnace Bundles	27.00
Heavy Turnings	27.00-28.00
No. 1 Chemical Borings	30.00
Knuckles and couplers	32.00-34.00
Steel car wheels	34.00

Cast Iron Grades

No. 1 Cupola Cast	34.00-35.00
No. 1 Machinery Cast	*38.50-39.00*
No. 1 Yard Cast	34.00
Charging Box Cast	36.00
Heavy Breakable Cast	36.00
Unstripped Motor Blocks	29.00
Clean Auto Cast	38.00
No. 1 Wheels	40.00
Malleable	39.00-40.00

CINCINNATI

No. 1 Heavy Melt. Steel	*$31.50*
No. 2 Heavy Melt. Steel	*27.00*
No. 1 Busheling	*31.50*
No. 1 Bundles	*31.50*
No. 2 Black Bundles	*26.00*
No. 3 Bundles	*20.00*
Machine Shop Turnings	*18.00*
Short Shovel Turnings	*21.00*
Mixed Borings, Turnings	*20.00*
Cast Iron Borings	*21.00*

Cast Iron Grades

No. 1 Cupola Cast	*45.00*
Charging Box Cast	36.00
Stove Plate	30.00
Heavy Breakable Cast	*36.50*
Unstripped Motor Blocks	27.00
Brake Shoes	*25.00*
Clean Auto Cast	*45.00*
Drop Broken Cast	*46.50*

Railroad Scrap

No. 1 R.R. Heavy Melt	33.00
R.R. Malleable	36.00
Rails, Rerolling	42.00
Rails, Random Lengths	*38.50*
Rails, 18 in. and under	*47.50*

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 2 Heavy Melt. Steel	$23.00-23.50
No. 1 Bundles	30.50-31.00
No. 2 Bundles	20.00-21.50
No. 1 Busheling	29.50-30.00
Machine Shop Turnings	17.50-18.00
Mixed Borings, Turnings	17.50-18.00
Short Shovel Turnings	21.00-21.50
Cast Iron Borings	21.00-21.50
Punchings & Plate Scrap	29.50-30.00

Cast Iron Grades

No. 1 Cupola Cast	36.00-37.00
Heavy Breakable Cast	31.00-32.00
Clean Auto Cast	41.00-42.00

BUFFALO

No. 1 Heavy Melt. Steel	$29.50-30.00
No. 2 Heavy Melt. Steel	27.50-28.00
No. 1 Bushelings	27.50-28.00
No. 1 Bundles	28.50-29.00
No. 2 Bundles	26.00-26.50
Machine Shop Turnings	18.00-18.50
Mixed Borings, Turnings	19.00-19.50
Cast Iron Borings	19.00-19.50
Short Shovelings	19.50-20.00
Low Phos.	30.50-31.00

Cast Iron Grades

No. 1 Machinery	*38.50-39.00*
No. 1 Cupola	*36.00-36.50*
Stove Plate	*33.50-34.50*
Malleable	*34.50-35.00*

Railroad Scrap

Rails, 2 ft. and under	38.00-39.00
Scrap rails	35.00-35.50
Specialties	*35.00-36.00*

NEW YORK

(Brokers' buying prices f.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$24.50-25.00*
No. 2 Heavy Melt. Steel	*20.50-21.00*
No. 1 Busheling	*21.50-22.50*
No. 1 Bundles	*24.50-25.00*
No. 2 Bundles	*19.00-19.50*
Machine Shop Turnings	*15.00-15.50*
Mixed Borings, Turnings	*15.00-15.50*
Short Shovel Turnings	*15.50-16.00*
Punchings & Plate Scrap	26.00-26.50
Low Phos. Plate, 5 ft & under	26.00-26.50
Elec. Furnace Bundles	*24.50-25.00*

Cast Iron Grades

No. 1 Cupola Cast	28.00-28.50
No. 1 Machinery	29.50-30.50
Charging Box Cast	29.00-30.00
Heavy Breakable	29.00-30.00
Unstripped Motor Blocks	22.00-22.50
Malleable	35.50

BOSTON

(F.o.b. shipping point)

No. 1 Heavy Melt. Steel	*$24.50-25.00*
No. 2 Heavy Melt. Steel	*21.00-21.50*
No. 1 Bundles	*24.00-24.50*
No. 1 Busheling	*23.00-23.50*
Machine Shop Turnings	*15.50-16.00*
Mixed Borings, Turnings	*15.50-16.00*
Short Shovel Turnings	*18.00-18.50*
Bar Crops and Plate	*26.50-27.00*
Punchings & Plate Scrap	*26.50-27.00*
Chemical Borings	*19.50-20.00*

Cast Iron Grades

No. 1 Cupola Cast	*32.00-33.00*
Mixed Cast	*26.50-27.00*
Heavy Breakable Cast	29.00-30.00
Stove Plate	*23.00-24.00*

CHICAGO

No. 1 Heavy Melt. Steel	*$30.00-31.00*
No. 2 Heavy Melt. Steel	*28.00-29.00*
No. 1 Bundles	*30.00*
No. 2 Bundles	*25.00-26.00*
Machine Shop Turnings	*20.00-21.00*
Mixed Borings, Turnings	*21.00-22.00*
Short Shovel Turnings	*22.00-22.50*
Cast Iron Borings	*21.00-22.00*
Low Phos.	*34.00-35.00*
Elec. Furnace Bundles	*31.00-32.00*
Heavy Turnings	*25.00-26.00*
Cut Structurals	*34.00-35.00*

Cast Iron Grades

No. 1 Cupola Cast	42.00-43.00
Clean Auto Cast	43.00-44.00
No. 1 Wheels	37.00-38.00
Stove Plate	32.50-33.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	*34.00-35.00*
Malleable	*42.50-43.50*
Rails, Rerolling	*47.00-48.00*
Rails, Random Lengths	36.00-37.00
Rails, 2 ft and under	*42.00-43.00*
Rails, 18 in. and under	*43.00-44.00*
Railroad Specialties	*36.00-37.00*
Angles, Splice Bars	*39.00-40.00*

BIRMINGHAM

No. 1 Heavy Melt. Steel	*$26.00*
No. 2 Heavy Melt. Steel	*24.00*
No. 1 Busheling	*25.00*
No. 2 Bundles	*22.00*
Machine Shop Turnings	19.50
Mixed Borings, Turnings	17.00
Short Shovel Turnings	23.00
Cast Iron Borings	19.00
Bar Crops and Plate	*28.00-29.00*
Cut Structurals	*28.00-29.00*

Cast Iron Grades

No. 1 Cupola Cast	*35.00-36.00*
Stove Plate	*30.00-31.00*
No. 1 Wheels	30.50-31.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	*27.00-28.00*
R.R. Malleable	nominal
Rails, Rerolling	33.00-35.00
Rails, 3 ft and under	*36.00*
Angles and Splice Bars	*35.00-36.00*

ST. LOUIS

No. 1 Heavy Melt. Steel	*$31.00-32.00*
No. 2 Heavy Melt. Steel	27.00-28.00
Machine Shop Turnings	*19.00-20.00*
Short Shovel Turnings	*20.00-21.00*

Cast Iron Grades

No. 1 Cupola Cast	37.00-39.00
Charging Box Cast	*33.00-34.00*
Heavy Breakable Cast	*32.00-33.00*
Brake Shoes	*33.00-34.00*
Clean Auto Cast	*38.00-40.00*
Burnt Cast	*32.00-33.00*

Railroad Scrap

R.R. Malleable	*35.00-36.00*
Rails, Rerolling	*47.00-48.00*
Rails, Random Lengths	*37.00-38.00*
Rails, 3 ft and under	*40.00-41.00*
Uncut Tires	*32.00-33.00*
Angles, Splice Bars	*37.00-38.00*
Railroad Specialties	*35.00-36.00*

SAN FRANCISCO

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	13.00
Machine Shop Turnings	9.00

Cast Iron Grades

No. 1 Cupola Cast	30.00-35.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Rails, Random Lengths	20.00

SEATTLE

No. 1 Heavy Melt. Steel	$18.00
No. 2 Heavy Melt. Steel	18.00
No. 1 Busheling	15.50
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	nom.
Machine Shop Turnings	13.00
Mixed Borings, Turnings	13.00
Punchings & Plate Scrap	27.50
Cut Structurals	27.50

Cast Iron Grades

No. 1 Cupola Cast	25.00-30.00
Heavy Breakable Cast	25.00
Stove Plate	25.00
Unstripped Motor Blocks	18.00
Malleable	25.00
Brake Shoes	20.00
Clean Auto Cast	27.50
No. 1 Wheels	27.50

Railroad Scrap

No. 1 R.R. Heavy Melt.	19.00
Railroad Malleable	25.00
Rails, Random Lengths	19.00
Angles and Splice Bars	19.00

LOS ANGELES

(F.o.b. car, Los Angeles)

No. 1 Heavy Melt. Steel	$20.00
No. 2 Heavy Melt. Steel	18.00
Nos. 1 & 2 Bundles	16.00
No. 3 Bundles	nom.
Machine Shop Turnings	5.00
Mixed Borings, Turnings	5.00
Punchings & Plate Scrap	26.00

Cast Iron Grades

No. 1 Cupola Cast	34.00

Railroad Scrap

No. 1 R.R. Heavy Melt.	20.00
Rails, Rerolling	30.00

HAMILTON, ONT.

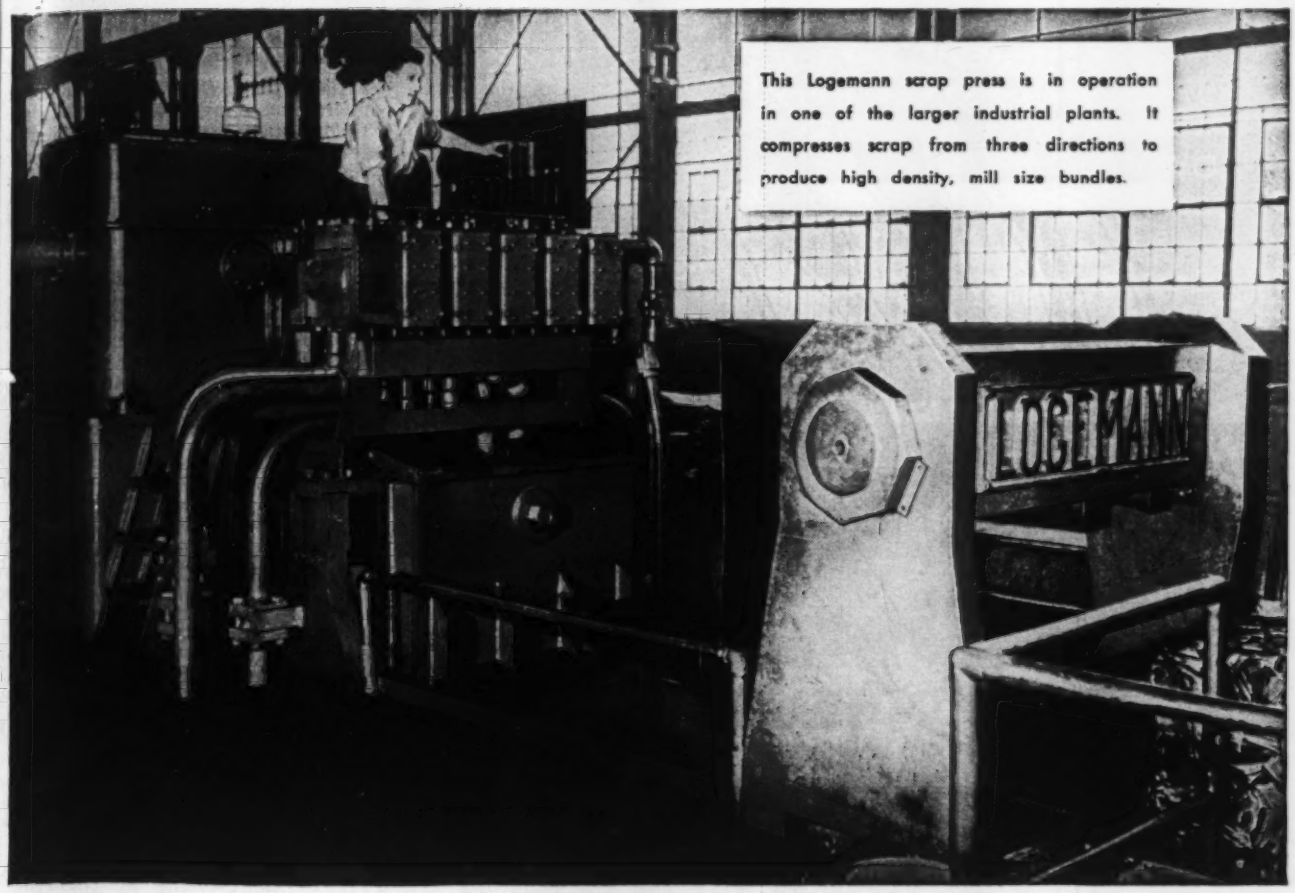
(Delivered prices)

Heavy Melt.	$27.00
No. 1 Bundles	27.00
Mechanical Bundles	25.00
Mixed Steel Scrap	23.00
Mixed Borings, Turnings	20.00
Rails, Remelting	27.00
Rails, Rerolling	30.00
Busheling	21.50
Bushelings new factory, prep'd	25.00
Bushelings new factory, unprep'd	20.00
Short Steel Turnings	20.00

Cast Iron Grades

Cast	40.00-43.00*

* F.o.b. shipping point.



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Sheets Strip . . .

Sheet and Strip Prices, Page 121 & 122

Pittsburgh—Active participation in conversion tonnage commitments for extended delivery periods indicates extent of unbalanced demand-supply situation in sheets and strip. No relief is in sight through September. One leading interest anticipates 100 per cent ingot rate through December; another, at same level through September with slight decline in closing months. Mill allotments through June have been established on basis of making up the tonnage lost during coal strike period. Most sellers are hopeful of entering third quarter with no carryover tonnage.

Elliott Bros. Steel Co., New Castle, Pa., advanced carbon cold-rolled strip prices $5 per ton to $4.40 per 100-pound base, effective May 1, on 20 gage and heavier. This action is in line with policy adopted earlier this year by other nonintegrated cold rollers to help offset the narrowed price spread between hot-rolled sheets and strip and cold-rolled strip. However, this pricing policy is not unanimous.

Most nonintegrated strip producers are not obtaining sufficient tonnage under mill allotment distribution to sustain operations much above 80 per cent of capacity; some interests are operating within range of 50 to 70 per cent. Efforts to take up the slack in rolling schedules with conversion tonnage supplied by customers have been disappointing in contrast to the volume of cold-rolled sheet tonnage converted by integrated mills from semifinished supplied by customers.

New York—First sizable sheet inquiry from an eastern arsenal reported in some time involves 3740 tons for bomb fins for Picatinny, N. J. Deliveries are to begin in November. Car builders are inquiring more actively for sheets and are seeking shipments before end of this quarter.

Pressure for sheets is strong. Producers who have opened their books for third quarter report schedules full to overflowing on most grades. Some producers have not opened their books beyond July on certain grades.

Philadelphia—No letup in sheet demand is noted. In fact, in some lines pressure is greater than ever. Locally, this is true in washing machines, dryers and deep freeze units. Little headway is being made on arrearages.

Cleveland—Sellers' carryover tonnage into third quarter will usurp much of the production in that period. Supply situation is especially acute in cold-rolled material. Republic Steel Corp. will not issue district tonnage quotas for July due to its present over-booked position for that month. Pressure on the sheet mills is even greater than it was during the acute shortage of 1947-48. One reason for this is that consumers are not resorting to the conversion market for their urgent requirements on the scale they did two years ago. While published prices are unchanged, a small Pittsburgh district producer of cold-rolled strip has advanced prices $5 per ton.

Cincinnati—Demand for sheets is

heavy. Capacity rolling fails to lessen pressure for shipments. Schedules have not been drawn for third quarter. Deliveries on stainless are more extended.

Chicago — Sheet consumers are growing more desperate for tonnage. Flat-rolled material supply is not expected to improve appreciably until fall at earliest. More users do not think they can exist that long on present rations and some are resorting to gray market material. Instances of gray market activity are investigated by mills whose steel is identified, but mill men doubt any significant quantity is moving in irregular channels.

St. Louis—Mills have opened third-quarter books on cold-rolled sheets and are alloting about 80 per cent of consumers' minimum wants, a slight increase over the second quarter. Granite City Steel Co. estimates it will have a three-week carryover despite continuing gains in production.

Birmingham—Sheet demand is active. Cold-rolled requirements exceed supplies. Galvanized tonnage is sold out.

San Francisco — Light flat-rolled steel product supplies continue to dwindle. Inquiries are gaining.

Plates . . .

Plate Prices, Page 121

New York—Plate promises are more extended. Deliveries can be had in some quarters in gages one-half inch and over within five weeks, but this is becoming more difficult; on the lighter gages, little can be had before third period. At least one large Pittsburgh producer is practically covered for entire third quarter.

Philadelphia—Plate demand is increasing. Mills are operating at the highest rate in months, but order books are more extended. On plates ⅜-in. and lighter, they are booked ahead 12 weeks and beyond; on heavier gages, some mills offer four to five weeks. Seasonal demand for fuel oil storage tanks is augmented by overflow requirements from the South and Midwest. Railroad car shops are taking larger tonnages. Strip mills are not producing much strip plate.

Chicago—Floor plates, formerly in easy supply, have tightened. Requirements are actual, there being little substitution of this product for the harder-to-get carbon plate. Partial revival of railroad car building is a factor in plate demand, coming on top of high consumption by large pipe makers.

Birmingham—Measure of supply relief in plates is expected when major car building requirements are satisfied. However, the Bessemer plant is accumulating stocks against orders that are likely to keep production steady until late November or early December.

Los Angeles—Producers are falling behind on deliveries as plate demand grows. Large pipe line requirements are making heavy demands on Kaiser Steel Corp.'s plate mill.

Seattle—Plate shop business is increasing, much of it in small tonnages. However, several large commitments are involved in government projects.

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Steel Bars . . .

Bar Prices, Page 121

New York — Bar consumers are making various demands upon mills for rescheduling of deliveries to take advantage of reduced rail rates on minimum carlots of 80,000 pounds. A number, who until recently had been requesting truck shipments, are switching to rail movement.

Meanwhile, demand for hot carbon bars is stronger and mill backlogs are more extended. Various producers have opened books for third quarter. Some are booked solidly through July and into August. Hot alloy bar shipments can he had before end of June.

Pittsburgh—Barring possibility of strike among General Motors' plants, automotive requirements for hot and cold-finished carbon and alloy bars are not likely to record significant change throughout third quarter. Due to inadequate hot-rolled bar stocks, most cold-finishers are operating below 90 per cent capacity. Deliveries on cold-drawn bars extend into August; hot-rolled open-hearth alloys, 4 to 6 weeks. Distribution of merchant carbon bars is on mill allotment basis.

Philadelphia—Leading hot carbon bar producers are now into August on shipments. Demand is increasingly heavy in a diversity of lines. Some consumers appear endeavoring to build inventories beyond current needs, anticipating an active steel market for some months and possibly higher prices.

Cleveland—Pressure for bar stock is increasing. Forge shops, fastener makers and farm implement manufacturers are actively seeking tonnage. Increased tightening of supply is especially noticeable in cold-finished bars, on which deliveries extend into July. Indications are overall carryover tonnage into third quarter will be substantial. Supply conditions in bars, however, are not comparable with the acute shortage being experienced in the flat-rolled products. Alloy bars, in fact, are available for fairly prompt shipment.

Chicago—Carbon bar order books for third quarter are expected to fill quickly, despite the less stringent position of this material compared to flat-rolled. Supply position of the two is not expected to show signs of much improvement before September.

San Francisco—Supplies of cold-rolled bars are generally ample. Consumers are exerting no pressure for deliveries. Only a slight pick-up in requirements is noted.

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Structural Shapes . . .

Structural Shape Prices, Page 121

Philadelphia—Bridgework features structural demand. Private construction is spotty but general volume is creeping up. Fabricating shops' books are more extended. Shape mills report the heaviest backlogs this year. Deliveries on standard sections range around 9 to 10 weeks, wide sections, 12 weeks.

Cleveland—Large number of small building projects are coming out serving to enliven the structural market in this area. Current work involves schools, apartments, small plants and plant alterations. One large job let recently was 1000 tons for a Shaker Heights apartment. This went to the Builders' Structural Steel Co. Price shading on fabricated work continues to be encountered. Shape deliveries from the mills now extend into third quarter.

Birmingham — Shape demand is spotty with the potential extremely large. Continued strike of plumbers and uncertainties elsewhere have deferred some major building plans. Most fabricators are busy.

Seattle—Fabricators are stepping up operations. Backlogs will carry through to August. Strong demand for small tonnages for schools and industrial plants is noted. Public works absorbs the bulk of fabricators' output.

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 124

New York—Eastern bolt and nut makers report the bottom has dropped out of export demand, but there is sufficient domestic business to sustain operations. While foreign iron and steel items are being received in increasing volume, bolt and nut makers report little import competition so far. Backlogs are around three to four weeks. There is a steady demand for manufacturing assembly fasteners and an improved demand for various structural requirements.

Semifinished Steel . . .

Semifinished Prices, Page 121

Pittsburgh — Realization of continued steel shortage through third quarter has prompted an increasing number of metalworking companies to supplement inventories via conversion channels. Those companies already obtaining steel via this route have assumed contract commitments through third quarter; previously they made single commitments or purchased on a month-to-month basis. Metalworking companies are paying $66 to $74 per ton for rerolling ingots; up to $101 for slabs from electric furnace steel, about $85 to $90 from open-hearth steel; $105 for heavy gage hot-rolled bands; and $70 to $75 for sheet bars. Cold-rolled sheets made from slabs originating here are being delivered to Detroit and Chicago consumers at cost of $140 to $163 per ton; hot-rolled strip at $110. Direct conversion charges range between $27 and $40 per ton; rebate allowances for scrap from $37 to $57.

Wire . . .

Wire Prices, Page 123

Pittsburgh — Unbalanced demand-supply situation in most wire classifications will continue into third quarter. Sellers are booked through July for manufacturers' wire and into late June on merchant products. Seasonal improvement in demand for fence, nails, etc., is noted from distributors. Demand from automotive and fastener trade remains heavy.

Birmingham—Hue and cry for wire products centers on woven fencing and the more popular sizes in nails. Demand for manufacturers' wire, especially from spring and mattress companies, is heavy.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 121

Cleveland—Pressure is rising for reinforcing tonnage as the building season advances. Numerous projects are coming out, and while most of them involve small lots, aggregate tonnage is large. Largest pending job noted in this area involves 1000 tons for the Ford engine plant project in Parma, O.

Seattle—Rolling mills are operating steadily, although below capacity. New work is developing, much of it involving small tonnages of reinforcing bars.

San Francisco—Small tonnages are moving actively, but lack of big orders has precluded tightness in supplies.

Tin Plate . . .

Tin Plate Prices, Page 122

Pittsburgh—Fire in the oil circulating system shutdown four electrolytic lines at Weirton Steel Co. for about 48 hours last week, resulting in substantial tonnage loss of tin plate and galvanized sheets. Pressure for prompt delivery of tin plate is increasing.

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Pig Iron . . .

Pig Iron Prices, Page 120

Pittsburgh—Merchant foundry iron supply is expected to tighten steadily over coming months due to improvement in operations among small jobbing shops and among steel foundries serving railroad interests. No let-up in demand is noted among captive foundries producing castings for steel mill machinery, heavy electrical equipment or appliances, and for radiation and enamelware units. Entire output of lone merchant foundry iron stack here is readily disposed of, and there is growing evidence foundry interests will have to rely more heavily on cast scrap to meet future production schedules.

Philadelphia—Slow increase in foreign iron imports is reported. Arrivals are heavier, reflecting contracts placed earlier in the year, and new orders are being placed. These include some basic at under $40, duty paid, on cars, Philadelphia. One small foundry closed on approximately 1500 tons of foreign iron, sufficient for its needs the remainder of the year. District producers have little difficulty in disposing of tonnage.

New York—Following a slight gain in pig iron shipments in April, district sellers anticipate further increase this month. Foundry operations are expanding steadily. Pig iron production at furnaces feeding this territory is keeping ahead of consumption; hence, no early stringency is expected.

Cleveland—Merchant iron sellers here are watching developments closely in a foundry labor dispute which threatens to force a severe curtailment of castings production in this immediate district. So far shipments of iron to the affected foundries have not been disturbed. Pig iron demand has been increasing over the past several weeks reflecting noticeable pickup in castings orders.

Birmingham—Avalanche of home building and resultant need for various items in pipe is contributing heavily to sustained pig iron demand. All district merchant furnaces are active.

St. Louis—Continuing pickup in foundry activity is putting more and more pressure on pig iron supplies. Koppers' furnaces here, which devote half of their 1100-ton daily capacity to foundry iron, are beginning to drop behind in deliveries.

Los Angeles — Shortage of ingot tonnage is delaying steel production at Kaiser's Fontana mill.

Seattle—Foreign pig iron at $47.56 delivered, is in general use by foundries in this area.

Buffalo—Pig iron sellers expect May's deliveries to be the best this year to date. Production holds at 100 per cent.

Scrap . . .

Scrap Prices, Page 123

Pittsburgh — Scrap market is strong. Brokers are offering up to $35 for No. 1 heavy melting. Mills contend they have not paid more than $35 for No. 1 heavy melting. Sales have been made at $34.50-$35.50. Pittsburgh consumers are up against strong competition for scrap in the East and other major scrap generating areas. Indicated high steel ingot output through remainder of year is chief factor for strength. Pressure to obtain better yields from blast furnace operations in effort to increase hot-metal to scrap ratio in open-hearth charge is reflected in further advance of 50 cents for short turnings to $28.50.

Philadelphia — Open-hearth grades of steel scrap are fractionally higher on the basis of $27-$27.50, delivered, for No. 1 heavy and No. 1 bundles. Adding to strength is active trading in Pittsburgh area. Apart from some No. 2 bundles, little tonnage is moving west from this district. Prices on cast grades appear nearing peak, although No. 1 machinery cast is up 50 cents to $38.50-$39, delivered.

CHICAGO—Prices are higher on all steelmaking grades, and brokers are finding it increasingly difficult to cover outstanding orders. Wholesale rejections of No. 2 bundles are causing some dealers to refuse acceptance of orders for the material. The new consumer price of $30-$31 for No. 1 heavy melting steel is insufficient to bring out sizable quantities of material.

New York—Trading in steel scrap continues active. Brokers have advanced buying prices on most grades of steel scrap $1 per ton. Cast grades are unchanged.

Boston—Steel scrap prices are

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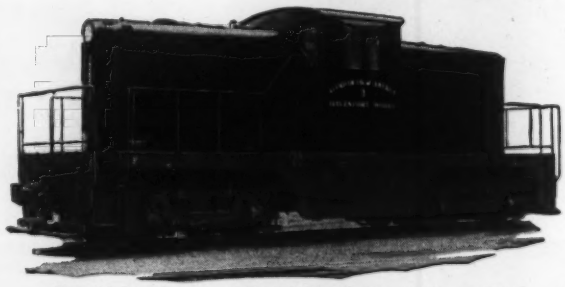

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higher, advancing $1 to $1.50 per ton shipping point, although increases are somewhat out of line as to normal differentials. Both heavy and lighter grades are included in the upturn with short shoveling turnings notably strong. Cast scrap is also higher, up $2 per ton on some grades with buying slightly more active.

Buffalo—Price advances of $2.50 to $3 a ton were posted on cast scrap on sales to one leading consumer. Firmer tendencies also ruled in steelmaking grades, but prices were nominally unchanged.

Cleveland—Scrap prices have advanced $1 a ton across the board in this district. Actually, there are two separate markets here: One for large tonnage production scrap which is being purchased by brokers at premiums for covering old contracts; the other for dealer scrap and material from plants producing less than 10,000 tons a month which is moving at quoted prices. Shipments continue to move in good volume, mainly on old contracts.

Cincinnati—Undertone of the scrap market is strong with prices moving upward. Mills are taking tonnage freely despite heavy inventories. Tonnage is coming out in volume.

Birmingham—Heavy melting steel scrap is up $2 to $26. Tonnage of scrap moving to local yards has increased with agricultural scrap coming into the open.

St. Louis—In the wake of price increases in the East, the scrap market here has boomed into what brokers call an "explosion" of activity. Nearly all prices are up $1 to $2.

Los Angeles—Increased interest by foundries is imparting a stronger tone to cupola cast. Dealers are stockpiling turnings.

Seattle—Steel scrap market is unchanged. Mills are buying limited tonnage, keeping inventories static.

Warehouse . . .

Warehouse Prices, Page 125

Chicago—Of little direct concern to district warehouses or customers is the influx of foreign steel on the seaboard, although a little of this material is penetrating the Midwest. Indirectly, however, it is expected such steel will relieve a little of the pressure here and possibly result in more eastern steel coming westward, especially if the freight absorption impasse is broken.

Cleveland—Indications are May order volume of distributors will equal, possibly better, that entertained in April. Regular mill customers are coming to the warehouses with orders for flat-rolled material, but the distributors are unable to accept such business since they are also pinched by the shortage in sheets.

Pittsburgh—Slight improvement in warehouse steel order volume noted in April is expected to continue, providing steel commitments with mill sources are shipped on schedule.

Philadelphia—District distributors look for another active month. Last month was slightly better than March. Inventories are in fair shape in all products except sheets.

Cincinnati—April sales were in good volume despite scarcity in sheets. Mill replacements are too slow to avoid tightness in plates, and stainless. Demand is upward for structurals, in fair supply. Prices are firm.

Los Angeles—Warehouse activity has leveled off on a high plateau. April distributor sales may equal those in March, a record month.

San Francisco—Distributor activity continues to improve, but business is spotty. Greatest demand is for sheets, some heavy structurals, merchant pipe and a few other products in which there is a tight supply position.

Seattle—Warehouse turnover is increasing. April totals showed a notable increase over March. Some larger buyers are ordering emergency items from distributors. Mill deliveries to the latter have slowed an extra month, three to four months now being the average time involved.

Iron Ore . . .

Iron Ore Prices, Page 125

Cleveland — Volume movement of iron ore from the head of the lakes at last is getting under way. First cargoes from Lake Superior ports were received at lower lake docks last week and a steady flow of tonnage is expected from here on. However, shippers will have to press hard throughout the rest of the season if they are to bring down 70 million or

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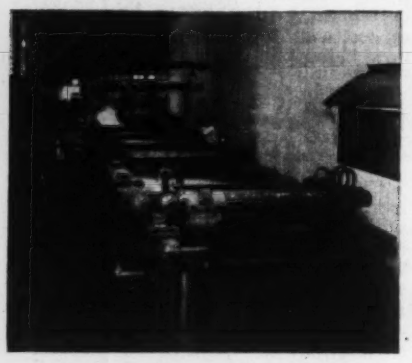

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more tons by the close of navigation. Iron ore shipments up to May 1 this year totaled only about 349,000 tons. by that date last year a total of 9,405,731 tons had ben shipped from the upper lakes.

Canada . . .

Toronto, Ont.—Canadian steel production in February fell below the total for January and for the like 1949 month. For February this year, output of steel ingots and castings amounted to 258,123 net tons compared with 289,949 tons in January and 259,271 in February, 1949.

Pig iron produced in February totaled 157,200 net tons compared with 190,432 in January and 172,724 in February, 1949.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2945 tons, New Jersey Turnpike Authority work, contracts Nos. 3, 3-A and 3-B, to Belmont Iron Works, Eddystone, Pa.

2900 tons, veterans hospital, Cincinnati, to Harris Structural Steel Co., New York.

2780 tons, New Jersey turnpike bridge, Contract 15, to Harris Structural Steel Co., New York.

920 tons, Ferry terminal building, St. George, Staten Island, New York City, to Schacht Steel Construction Inc., New York.

900 tons, Ladd Field, Alaska, power house, to Independent Iron Works, Oakland, Calif.; Peter Kiewit & Sons, general contract.

820 tons, White Laboratory building, Kenilworth, N. J., to Elizabeth Iron Works, Elizabeth, N. J.

780 tons, parking garage, Omaha, Nebr., to Gate City Steel Works Inc., that city.

605 tons, Public School No. 184, Queens, New York, to Schacht Steel Construction Inc., New York.

595 tons, plant at Eagle Ford, Tex., General Portland Cement Co., Chicago; 380 tons to Mosher Steel Co., Houston; 215 tons to Mississippi Valley Structural Steel Co., Decatur, Ill.; 215 tons, still pending; Austin Co., Cleveland, contractor.

590 tons, catholic church and friary, Madison street, Chicago, to Hansell-Elcock Co., that city.

545 tons, apartment, 440 East 46th St., New York, to Harris Structural Steel Co., that city.

450 tons, New Jersey state bridge, to American Bridge Co., Pittsburgh.

440 tons, building, Empire Life Insurance Co., Indianapolis, to Central States Bridge & Structural Co., that city.

400 tons, W. T. Grant store, Hempstead, Long Island, to Bethlehem Steel Co.

400 tons, state highway bridges, Sturbridge, Mass., to American Bridge Co., Pittsburgh; White Oaks Excavating Co., Plainville, Conn., general contractor.

370 tons, bridge, Muscatine county, Iowa, through A. M. Cohrum & Son, contractors, to Bethlehem Steel Co.

310 tons, apartment, Saunders street and 64th road, Queens, New York, to Grand Iron Works, that city.

300 tons, building, Greenway Supply Co., Glendale, N. Y., to Simon Holland & Son, Brooklyn, N. Y.

299 tons, 445-ft span over Wapsipinicon river, Linn county, Iowa, to American Bridge Co., Pittsburgh.

260 tons, Irving Park bridge, Chicago, through John F. Besly Construction Co., to Bethlehem Steel Co.

255 tons, New York state bridge, to Rome Iron Mills, Rome, N. Y., and McCoy Iron Works, Utica, N. Y.

250 tons, Brillo manufacturing building, Brooklyn, to Bethlehem Fabricators Inc., Bethlehem, Pa.

250 tons, junior and senior high school, De-

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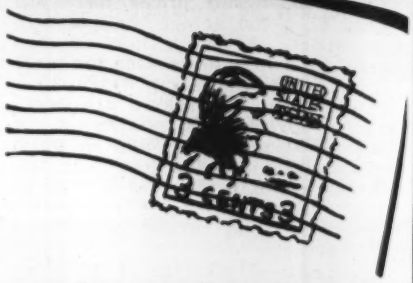

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posit, N. Y., to Ithaca Structural Steel Co., Ithaca, N. Y.

250 tons, government building in eastern Washington, to Bethlehem Pacific Coast Steel Corp., Seattle.

250 tons, Oregon state highway bridge, to Poole, McGonigle & Dick, Portland Oreg.; Tom Lillebo, Reedsport, Oreg., general contract.

240 tons, Contract 427, Wappinger, N. Y., for New York City Board of Water Supply, to Belmont Iron Works, Eddystone, Pa.

200 tons, power house, Fields, N. Y., to Schacht Steel Construction Inc., New York.

200 tons, incinerator, Yonkers, N. Y., to Levin Bros. Iron Works, that city.

180 tons, press frames in Gary, Ind., plant, Budd Co., Philadelphia, to Hansell-Elcock Co., Chicago.

164 tons, bridge, Corson county, South Dakota, proj. WER-ER-51-6, to Egger-Scudder Co.

150 tons, building, Packit Envelope & Bag Co., Chicago, to Hansell-Elcock Co., that city.

150 tons, plant, Ekco Products Co., Chicago, to Hansell-Elcock Co., that city.

150 tons, high school, Richland, Wash., to Isaacson Iron Works, Seattle.

150 tons, bridge, Pierce county, Wis., to Hobbs Supply Co.

140 tons, building, 38th avenue and 23rd street, Long Island City, N. Y., to Levine Bros. Iron Works, Yonkers, N. Y.

130 tons, overpass, Harrison street, Edens superhighway, Skokie, Ill., to American Bridge Co., Pittsburgh.

125 tons, library, College of St. Rose, Albany, N. Y., to Ernst Iron Works Inc., Buffalo.

125 tons, two-span rolled beam bridge, Howard avenue, New Haven, Conn., to Phoenix Bridge Co., Phoenixville, Pa.; D. V. Frione Co., Inc., New Haven, general contractor.

121 tons, bridge, Harding county, South Dakota, proj. WER-581F, to Egger-Scudder Co.

120 tons, school addition, Allegheny, N. Y., to Erie Concrete & Steel Supply Co., Erie, Pa.

110 tons, Franklin Heating station, Rochester, Minn., to St. Paul Foundry & Mfg. Co., St. Paul.

102 tons, Laramie avenue grade separation, Chicago, to Bethlehem Steel Co.

100 tons, railroad relocation, McNary dam, Oregon state, to Bethlehem Pacific Coast Steel Corp., Seattle; Morrison-Knudsen Co., Seattle, general contract.

100 tons, buildings, Texas Technological College, Lubbock, Tex., to Panhandle Steel Products Co., Lubbock; R. F. Ball Construction Co., Houston, general contractor.

100 tons, including reinforcing, towers and switchgear, Olympia, Wash., substation; materials furnished by Bonneville Power Administration; D. W. Close, Seattle, general contract, low $127,058.

Unstated, 21 overhead bridge cranes for fabricating plant, Bethlehem Pacific Coast Steel Corp., Seattle; to Ederer Engineering Co., Seattle.

STRUCTURAL STEEL PENDING

20,300 tons, New Jersey state turnpike bridge over the Passaic river, contract No. 20; Bethlehem Steel Co. low.

15,500 tons, New Jersey state turnpike bridge over Hackensack river, contract No. 17; American Bridge Co., Pittsburgh, low.

2500 tons, bascule bridge, Atlantic Beach Authority, New York, Phoenix Bridge Co., Phoenixville, Pa., low.

2050 tons, New Jersey turnpike bridge over the Raritan river, contract No. 30, Harris Structural Steel Co., New York, low.

1800 tons, New York Central bridge, Cleveland; recommendation that Mt. Vernon Bridge Co.'s low bid be accepted has been made to U. S. Engineers.

1475 tons, state turnpike work, Allegheny county, Pennsylvania; bids May 23. Tonnage comprises 782 tons for contract 30-E and 693 tons for contract 30-F.

1300 tons, junior high school, Bronx, New York; bids asked.

1200 tons, estimated, Public School No. 125, Bronx, New York; bids May 11.

1200 tons, state bridge, Allegheny county, Pennsylvania; bids May 26.

1000 tons, contract No. 27, New Jersey Turnpike Authority, bids May 23; other requirements include 12,400 feet of pipe conduit and 5900 feet of bridge railing.

300 tons, addition to Public School No. 46, Richmond, New York; bids closed.

790 tons, dairy, Lehigh Valley Cooperative Farmers, Allentown, Pa.; bids asked.

200 tons, state highway bridge, Wilmington, Del.; bids May 23.

165 tons, 205-foot three-span state bridge, Saco river, Conway, N. H.; bids May 11, Concord, N. H.

145 tons, three-span, I-beam bridge, Sullivan avenue, Shelton, Conn.; bids May 15, Hartford, Conn.

125 tons, bridge approach, Delaware Bridge Commission, Easton, Pa.; Union Building & Construction, Passaic, N. J., low on general contract.

125 tons, 189-foot twin span deck plate girder bridge, Gorham, N. H.; bids in; also 40 tons reinforcing steel bars.

105 tons, approach, Delaware Memorial bridge, Wilmington, Del.; Conduit & Foundation Corp., Philadelphia, low on general contract.

Unstated, Foster Creek - Snohomish power line, Washington state, involving steel towers; bids to Bonneville Power Administration, Portland, Oreg., May 12.

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REINFORCING BARS PLACED

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Co., Houston; R. F. Ball Construction Co., Houston, general contractor.

500 tons, St. Luke's Hospital, Cedar Rapids, Iowa, to Laclede Steel Co., St. Louis.

425 tons, Washington state Snake river bridge, to Mercer Steel Co., Portland, Oreg.

380 tons, Wellington avenue apartments, Chicago, to Olney J. Dean Steel Co., that city.

350 tons, flood wall, Williamsport, Pa., to United States Steel Supply Co., Chicago.

325 tons, sewage treatment plant, Waupun, Wis., to Cook & Brown.

314 tons, St. Edwards high school, Lakewood, O., to Builders Structural Steel Co., Cleveland.

195 tons, Wheeling & Lake Erie railroad bridge, Cleveland, to Paterson-Leitch Co., that city.

155 tons, Harrison school, Hamilton, O., to Wm. B. Pollock Co., Youngstown.

155 tons, sewage plant, Akron, O., to Truscon Steel Co., Youngstown.

150 tons, factory, Gary, Ind., Budd Co., to Bethlehem Steel Co.

128 tons, apartment building, 1500 Hinman Ave., Evanston, Ill., through Carl E. Erickson Co., contractor, to Joseph T. Ryerson & Son Inc., Chicago.

125 tons, Fairview Manor apartments, Fairbanks, Alaska, to Northwest Steel Rolling Mills Inc., Seattle; Nels Mortenson & Son, Seattle, general contractor.

101 tons, Dravosburg bridge, Allegheny county, Pa., to United States Steel Supply Co., Pittsburgh.

100 tons, state highway bridge, Sutton-Northbridge - Douglas - Uxbridge, Mass., to Plantation Steel Co., Providence, R. I.; S. & M. Construction Co., Providence, general contractor.

100 tons, county bridge and miscellaneous local contracts, to Bethlehem Pacific Coast Steel Corp., Seattle.

REINFORCING BARS PENDING

11,000 tons, stilling basin and powerhouse foundation, Garrison dam, Riverdale, N. D.; United Construction Co., Winona, Minn., low on general contract.

2100 tons, bridge work, contract No. 27, New Jersey Turnpike Authority, Trenton, N. J.; bids May 23.

1500 tons, apartment building, Pittsburgh; bids asked.

1325 tons, state bridges, Berkley-Raynham-Taunton, Mass.; Campanella & Cardi Construction Co., Hillsgrove, R. I., low on general contract.

750 tons, construction work for U. S. Engineers, New Albany, Ind.; bids asked.

680 tons, office building, Ft. Madison, Iowa; bids asked.

655 tons, state highway and bridges, Berkley-Raynham-Taunton, Mass.; Campanelle & Cardi Construction Co., Hillsgrove, R. I., low, general contract.

315 tons, waterworks improvements, Cincinnati; bids asked.

250 tons, parking garage, Omaha, Nebr.; bids asked.

250 tons, highway, Hartford-Windsor, Conn.; M. A. Gammino Construction Co., Providence, R. I., low, general contract.

230 tons, processing plant, H. C. Christians Co., Chicago; bids asked.

175 tons, state highway bridge, Salem, Mass.; Thomas Rawson, Woburn, Mass., low, general contract.

150 tons, Edgewater Towers apartments, Lakewood, O.; bids asked.

116 tons, University music building, Moscow, Idaho; bids in.

100 tons, Washington state highway projects; bids in.

Unstated, 12 story, $1 million Ridpath hotel, Spokane; general contract to Utah Construction Co., San Francisco.

Unstated, Oregon state Willamette river bridge, Salem; general contract to State Construction Co., Seattle, low $172,699.

Unstated, Oregon state office building, Portland; general contract to Ralph & Horowitz, Portland, low, $1,366,477.

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YES, painting and finishing superintendents and foremen, process and product engineers, job paint shop-owners, chemists and metallurgists everywhere, are saying good things about the OAKITE CrysCoat PROCESS. They have found that it:

- cleans metal surfaces and conditions them for painting
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and does all these things with minimum equipment . . . in minimum time . . . at minimum cost

FREE Write to Oakite Products, Inc., 34E Thames St., New York 6, N. Y., for illustrated folder F7642 which describes the OAKITE CrysCoat PROCESS and tells how it *cuts cost 10 ways* in preparing metal for painting.

*Reg. U. S. Pat. Off.

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Unstated, city stadium, Spokane, Wash.; general contract to McInnes and Henry George & Sons, Spokane, low $496,000.

PLATES . . .

PLATES PLACED

4700 tons, sheet and T piling for Chief Joseph dam, to Columbia Steel Co., by U. S. Engineer, Seattle, low $428,660.

975 tons, three tanks, Socony Vacuum Oil Co., New York, to Chicago Bridge & Iron Works, Chicago.

100 tons or more, 1 million-gallon standpipe, Middleton, Conn., to Hammond Iron Works, New York.

PLATES PENDING

175 tons, 360 pieces sheet steel piling; bids to U. S. Engineer, Seattle, May 8.

160 tons, H-section bearing piles, delivery Juniper, Oreg; bids to U. S. Engineer, Walla Walla, Wash., May 11.

100 tons, Alaska construction for Standard Oil Co.; general contract to Morrison-Knudsen Co., Seattle.

100 tons plus, elevated water tower for Palestine Hill district, Portland, Oreg.; award pending.

100 tons or more, water tank, veterans' hospital, Salisbury, N. C.; Chicago Bridge & Iron Co., Philadelphia, low, $57,500.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Southern, 40 diesel-electric locomotives, including twenty-four 1500-hp freight and passenger units and sixteen 1600-hp road switchers; divided among Electro-Motive Division, General Motors Corp., La Grange, Ill., American Locomotive-General Electric companies, Schnectady, N. Y., and Fairbanks, Morse & Co., Chicago.

RAILS PLACED

Alaska Railroad, by Federal Supply Service, 47,500 tons of 115-lb rails, to Colorado Fuel & Iron Corp.; Minnequa, Col.

Alaska Railroad, 12,000 tons of railroad spikes, to Bethlehem Pacific Coast Steel Corp., Seattle.

Alaska Railroad, 10,000 tons of tie plates, to Bethlehem Pacific Coast Steel Corp., Seattle.

Alaska Railroad, 2000 tons of rail joint bars, to Colorado Fuel & Iron Corp., Minnequa, Col.

Alaska Railroad, 300 tons of track bolts and nuts, to Bethlehem Pacific Coast Steel Corp., Seattle.

FERROALLOYS

(*Continued from Page* 125)

Foundry Ferrochrome: (Cr 62-66%, C 5-7%). Contract, c.l., SMxD, bulk, 22.0c per lb of contained Cr, c.l., packed 22.9c, ton 24.25c, less ton 26.0c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.03% C 31.85c per lb of contained Cr, 0.04% C 29.75c, 0.06% C 28.75c, 0.10% C 28.25c-28.5c, 0.15% C 28.0c, 0.20% C 27.75c, 0.50% C 27.5c, 1% C 27.25c, 1.50% C 27.1c, 2% C 27.0c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

"SM" Low-Carbon Ferrochrome: (Cr 62-66%, Si 4-6%, Mn 4-6%, C 0.75-1.25% max.). Contract, carload, lump, bulk 27.75c per lb of contained chromium, carload, packed 28.85c, ton lots 30.05c, less ton 31.85c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome, Nitrogen Bearing: Add 5c to 0.10% C low-carbon ferrochrome prices for approx. 0.75% N. Add 5c for each 0.25% of N above 0.75%.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 20.50c per lb of contained chromium plus 11.30c per pound of contained silicon; 1" x down, bulk 20.65c per pound of contained chromium plus 11.50c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min. 97% Cr and 1% Fe). Contract, carload, 1" x D; packed, max 0.50%

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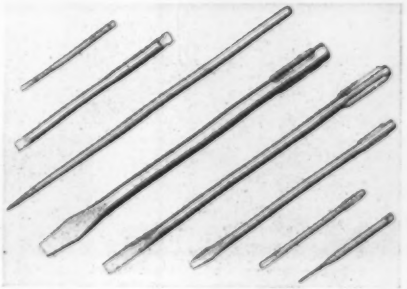

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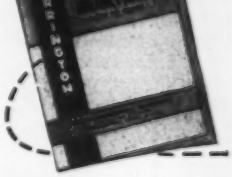

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188	338	700	1250	1800
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213	363	800	1350	1900
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C grade, $1.03 per lb of contained chromium, ton lot $1.05, less ton $1.07. Delivered. Spot, add 5c.

Silicon Alloys

25-30% Ferrosilicon: Contract, carload, lump, bulk, 17.00c per lb of contained Si; packed 18.40c; ton lot 19.50c, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 11.3c per lb of contained Si, carload packed 12.9c, ton lot 14.35c, less ton 16c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per lb of contained Si, carload packed 14.8c, ton lot 15.95c, less ton 17.2c. Delivered. Spot, add 0.8c.

80-90% Ferrosilicon: Contract, carload, lump, bulk, 14.65-15.0c per lb of contained Si, carload packed 15.9c, ton lot 16.9c, less ton 18.05c. Delivered. Spot, add 0.25c.

Low-Aluminum 85% Ferrosilicon: (Al 0.50% max.). Add 0.7c to 85% ferrosilicon prices.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 16.5c per lb of contained Si, carload packed 17.7c, ton lot 18.65c, less ton 19.7c. Delivered. Spot, add 0.25c.

Low-Aluminum 90-95% Ferrosilicon: (Al 0.50% max.). Add 0.7c to above 90-95% ferrosilicon prices.

Silicon Metal: (Min. 97% Si and 1% max. Fe). C.l. lump, bulk, regular 19.0c per lb of Si, c.l. packed 20.2c, ton lot 21.1c, less ton 22.1c. Add 1.5c for max. 0.10% calcium grade. Deduct 0.4c for max. 2% Fe grade analyzing min. 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 7.65c per lb of alloy, ton lots packed 9.05c, 200 to 1999 lb 9.40c, smaller lots 9.90c. Delivered. Spot up 0.5c.

Briquetted Alloys

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 13.75c per lb of briquet, carload packed 14.45c, ton lot 15.25c, less ton 16.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 10.45c per lb of briquet, c.l. packaged 11.25c, ton lot 12.05c, less ton 12.45c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 10.30c, per lb of briquet, c.l. packaged 11.1c, ton lot 11.9c, less ton 12.8c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.15c per lb of briquet, c.l. packed 6.95c, ton lot 7.75c, less ton 8.65c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.30c, c.l. packed 7.10c, ton lots 7.90c, less ton 8.80c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) 95.00c per pound of Mo contained. F.o.b. Langeloth, Pa.

Calcium Alloys

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%.) Contract, carload, lump, bulk 19.25c per lb of alloy, carload packed 20.05c, ton lot 21.55c, less ton 22.55c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 17.9c per lb of alloy, carload packed 19.1c, ton lot 21.0c, less ton 22.5c. Delivered. Spot add 0.25c.

Titanium Alloys

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max., Si 4% max., C 0.10% max.) Contract, ton lots 2" x D, $1.40 per lb of contained Ti; less ton $1.45. (Ti 38-43%, Al 8% max., Si 4% max., C 0.10% max.) Ton lot $1.28, less ton $1.35, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $160 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 3-4.5%.) Contract, $175 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

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Vanadium Alloys

Ferrovanadium: Open-hearth Grade (Va 35-55%, Si 8-12% max., C 3-3.5% max.) Contract, any quantity, $2.90 per lb of contained Va. Delivered. Spot, add 10c, **Crucible-Special Grades** (Va 35-55%, Si 2-3.5% max., C 0.5-1% max.), $3. **Primos and High Speed Grades** (Va 35-55%, Si 1.50% max., C 0.20% max.) $3.10.

Grainal: Vanadium Grainal No. 1, 93c; No. 6 63c; No. 79, 45c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.20 per lb contained V_2O_5, freight allowed. Spot, add 5c.

Tungsten Alloys

Ferrotungsten: (70-80%). Contract, 10,000 lb W or more, $2.25 per lb of contained W; 2000 lb W to 10,000 lb W, $2.35; less than 2000 lb W, $2.47. Spot, add 2c.

Tungsten Powder: (W 98.8% min.). Contract or spot, 1000 lb or more, $2.90 per lb of contained W; less than 1000 lb W, $3.

Zirconium Alloys

12-15% Zirconium Alloys: (Zr 12-15%, Si 39-43%, Fe 40-45%, C 0.20% max.). Contract, c.l., lump, bulk 6.6c per lb of alloy, c.l. packed 7.35c, ton lot 8.1c, less ton 8.95c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract carload, lump, packed 20.25c per lb of alloy ton lot 21c, less ton 22.25c. Freight allowed. Spot, add 0.25c.

Boron Alloys

Ferroboron: (B 17.50% min., Si 1.50% max., Al 0.50% max., C 0.50% max.). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered. Spot, add 5c F.o.b. Washington, Pa., prices 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min. B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $4.25 per lb contained B, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2% contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y., frt allowed same as high-carbon ferrotitanium.

Other Ferroalloys

Ferrocolumbium: (Cb 50-60%, Si 8% max., C 0.4% max.). Contract, ton lot, 2" x D, $3.50 per lb of contained Cb, less ton $3.55. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min. C 0.30 max.) ton lots, 2" x D, $2.67 per lb of contained Cb plus Ta, delivered; less ton lots $2.72.

CMSZ Mixes: (No. 4—Cr 45-49%, Mn 4-6%, Si 18-21%, Zr 1.25-1.75%, C 3-4.5%; No. 5—Cr 50-56%, Mn 4-6%, Si 13.50-16.0%, Zr 0.75-1.25%, C 3.50-5%). 12 M x D, carload packed 19.0c per lb of material, ton lot 19.75c, less ton 21.0c. Delivered.

Silcaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 43c per lb of alloy, ton lot 45c, less ton 47c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx.). Contract, carload, packed, ½" x 12 M, 16.5c per lb of alloy, ton lots 17.50c, less ton 18.5c. Delivered. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.00c per lb of alloy; ton lots 18.00c; less ton lots 19.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 14.25c per lb of alloy; ton lots 15.75c; less ton lots 17.00c, f.o.b., Niagara Falls, N. Y.; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al). Lump, bulk, carload 11.00c. Ton lots, bulk 11.50c, packed 11.75c. Less ton lots, packed 12.25c per lb of alloy, f.o.b. Philo, O., with freight not to exceed railroad freight allowed to destination.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. seller's works, Mt. Pleasant, or Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb, contained Mo, f.o.b. Langeloth and Washington, Pa., furnace, any quantity $1.13.

Technical Molybdic-Oxide: Per lb, contained Mo., f.o.b. Langeloth and Washington, Pa., packed in bags containing 20 lb of molybdenum, 95.00c.

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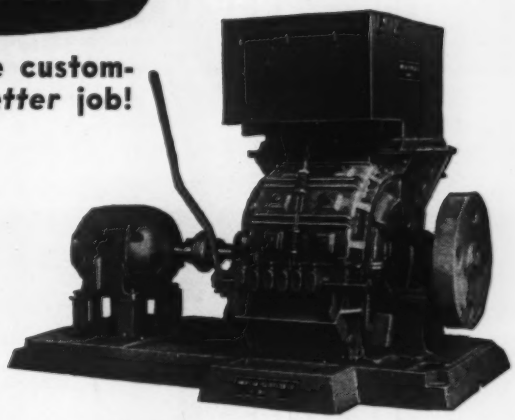

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Metalworking Briefs

CONSTRUCTION, ENTERPRISE ORGANIZATIONAL CHANGES

Alabama

Cherokee Centrifugal Foundry Co., Alexander City, Ala., plans to erect a plant for manufacturing pipe and fittings.

Alabama

Southeastern Metals Co., Birmingham, plans establishment of a steel tubing manufacturing plant on 35th street, that city.

Alabama

Ray-Brooks Machinery Co., Montgomery, Ala., has plans in progress by Pearson, Tittle & Narrows, First National Bank Bldg., that city, for a machinery building. Cost is estimated at about $125,000.

Arkansas

Floyd H. Sexton, East St. Louis, Ill., plans to build a plant for fabrication of pipe and fittings. Cost is estimated at $150,000.

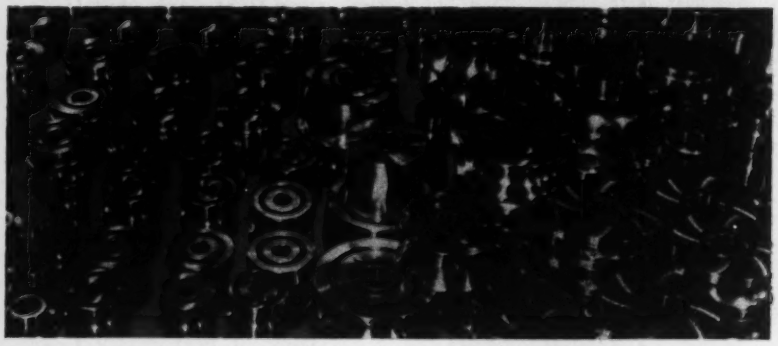
California

Holly Meat Packing Co. is building a $300,000 plant in Oakland, Calif.

British Information Services

GOLIATH MAKES BOW: This high-speed earth-moving machine manufactured by Blaw-Knox Ltd., British associate of Blaw-Knox Co., Pittsburgh, is making its first public appearance in the engineering section of this year's British Industries Fair to be held beginning today at Earls Court and Olympia, London, and Castle Bromwich, Birmingham. The machine is a combination of a two-wheeled tractor and a cable-operated open-stop spreader. Blaw-Knox says it can carry a full load over most types of country at 20 mph

ARDCOR TUBING ROLLS



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California

Thomas - Diggs Co., Sacramento, Calif., hardware firm, is erecting a $600,000 distribution branch building in Fresno, Calif.

California

DeVilbiss Co., Toledo, O.—air compressors, spraying and atomizer equipment—will open an assembly, warehousing and distribution plant in Santa Clara, Calif., about June 1.

California

Seaboard Coil Spring Corp., Los Angeles, will expand its factory area to increase production of precision and commercial coil springs by 35 per cent. Ted R. Cooper Co. Inc., that city, is the contractor. Work is scheduled for completion by July 1.

California

Reliance Steel Co., Los Angeles, added 20,000 sq ft of warehouse floor area to permit the stocking of a wider range of types and sizes of steel. New equipment, new office facilities and additional trucks were added.

California

Layne & Bowler Corp., distributor of hydraulic pumps, moved its offices and warehouse to 1504 E. Truxtun Ave., Bakersfield, Calif.

Delaware

Kratky International Co. Inc.—machinery—has filed a charter of incorporation with the corporation department of the secretary of state's office, Dover, Del. Capital is $80,000. Corporation Service Co., Delaware Trust Bldg., Wilmington, Del., is the principal office.

Illinois

Bausch & Lomb Optical Co., Rochester, N. Y., acquired **Riggs Optical Co.,** Chicago, an affiliated distributor for many years. The Chicago firm will be known as Bausch & Lomb Optical Co., Central Division, with headquarters at 18 S. Michigan Ave. J. Edgar Bohle is manager of the new division.

Illinois

Dura-Lite Casting Corp., 205 Oakwood Ave., Danville, Ill., was organized by M. P. Hall, R. R. Bookwalter and Dean A. Harrington for the manufacture and casting of metals.

Illinois

National Lock Co., Rockford, Ill., awarded contract for construction of a factory addition to **Security Bldg. Co.,** 717 E. Jefferson St. Gilbert A. Johnson, American National Bank Bldg., Rockford, architect.

Iowa

Wright Welding Supply, 1207 Cherry St., Des Moines, Iowa, is appointed an authorized dealer of Airco products by **Air Reduction Sales Co.,** New York. The Des Moines company is owned and operated by J. W. King.

Kentucky

Henry A. Marks and Dolph Harteveld, Union Trust Bldg., Louisville, will erect a $2 million building in that city for the **J. O. Penney Co.,** department store chain.

Louisiana

New Orleans Union Passenger Terminal Committee has received a low bid, $359,000, from Keller Construction Corp., 7900 Palm St., for a warehouse.

Missouri

White-Rodgers Electric Co., 1209 Cass Ave., St. Louis, manufacturer of electric thermostatic controls, plans to build a $500,000 plant (including equip-

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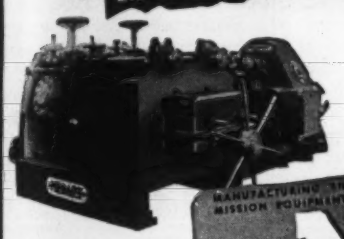

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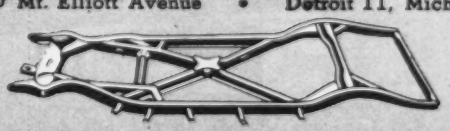

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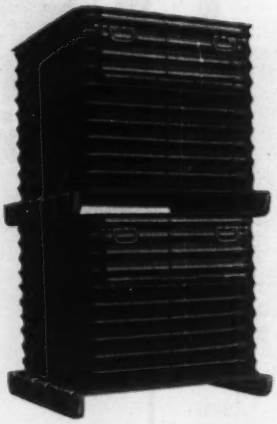

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Maryland

Enameled Metals Co., Pittsburgh, appointed **Quick & Batchler Inc.,** 31 S. Calvert St., Baltimore, as sales representative for conduit, tubing and fittings.

Michigan

Effective July 1, **Nineteen Hundred Corp.,** St. Joseph, Mich., manufacturer of home laundry equipment, will change its name to **Whirlpool Corp.**

Minnesota

National Radiator Co., Johnstown, Pa., appoints **Twin City Sales,** 160 Broadway N.E., Minneapolis, as sales representative in Minnesota and North Dakota.

New Hampshire

Norcor Mfg. Co., Green Bay, Wis., moved to Portsmouth, N. H., taking 27,000 sq ft of space in the Morley Co. plant. Norcor produces tubular steel schoolroom chairs and desks.

New Jersey

Universal Coatings Inc., with laboratory and factory at Ten Avenue C, Newark 5, N. J., is organized by Dr. Marcus Thau.

New York

Binghamton Die & Machine Co. moved from 36 Wall St., Binghamton, N. Y., to 44 Charlotte St., formerly occupied by the **Dedek Tool & Die Co.**

New York

Acheson Colloids Corp., Port Huron, Mich., opens headquarters of its Dispersed Pigments Division at 420 Lexington Ave., New York. Graphite Division of the company's New York office continues at 50 Church St.

New York

American Silver Co. Inc., Flushing, N. Y., changed the name of its Gold Filled Division to Rolled Plate Division.

New York

Potter Instrument Co. Inc. is transferring its operations to a newly constructed plant at 115 Cutter Mill Rd., Great Neck, Long Island, N. Y.

New York

Colorado Fuel & Iron Corp., New York, will move its executive offices and those of its Wickwire Spencer Division early in 1951 to the Uris Bros. Bldg., now being erected at 575 Madison Ave., that city. The corporation has taken a long term lease on the entire 14th floor of the building. The new space, totaling 15,600 sq ft, is nearly 42 per cent greater than the space occupied currently in the 500 Fifth Ave. Bldg. The new space also will house the New York district sales offices of the Wickwire Spencer Division.

Ohio

Bruce Foundry Co., a new corporation, started operation of its facilities in Kenton, O. The company has leased the Kenton foundry, owned by Harry Duckham, Kenton. W. V. Coons, formerly of Owosso, Mich., is manager of the foundry. Announcement was made by W. J. Bruce, president, Bruce Foundry & Mfg. Co., Tecumseh, Mich.

Ohio

Temporary offices are being established by **Ford Motor Co.,** Dearborn, Mich., in the plant of **Cincinnati Bickford Tool Co.,** Forrer street, Oakley, Cincinnati. The offices will be temporary headquarters for the transmis-

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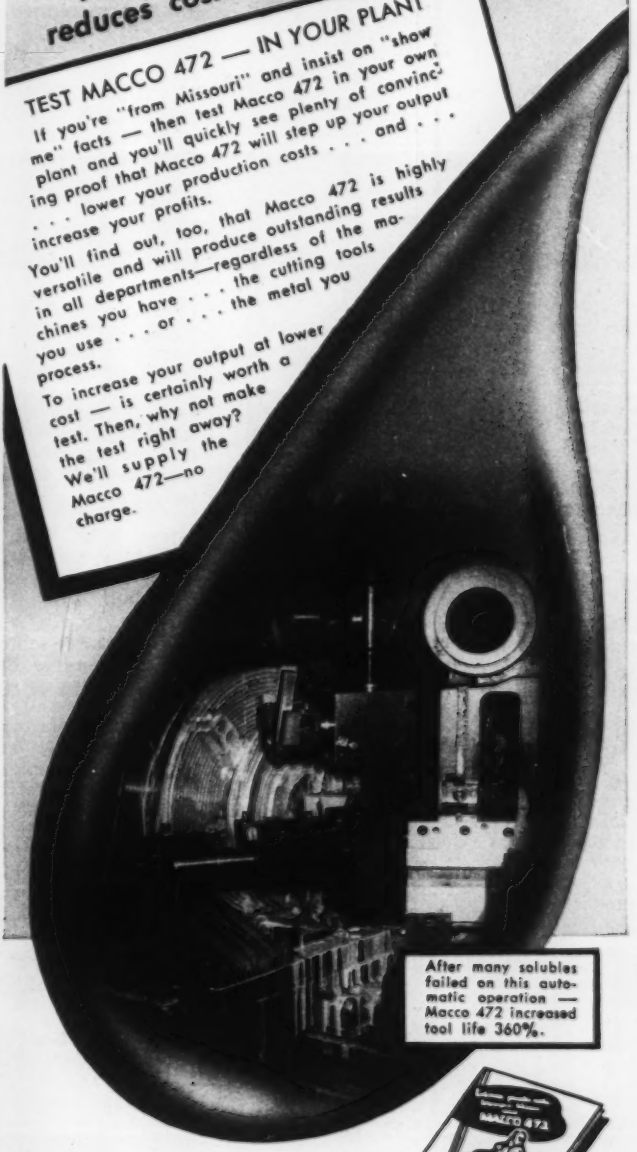

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